

Ivan V. Bajić

School of Engineering Science
Simon Fraser University
Burnaby, BC, Canada

e-mail: ibajic@ensc.sfu.ca
web: www.sfu.ca/~ibajic
lab: multimedia.fas.sfu.ca

Education

2003	Rensselaer Polytechnic Institute, Troy, NY, USA	Ph.D. in Electrical Engineering
2002	Rensselaer Polytechnic Institute, Troy, NY, USA	M.S. in Mathematics
2000	Rensselaer Polytechnic Institute, Troy, NY, USA	M.S. in Electrical Engineering
1998	University of Natal, Durban, South Africa	B.Sc.Eng. in Electronic Eng. (<i>summa cum laude</i>)

Work experience

- **Professor**, School of Engineering Science, Simon Fraser University, Burnaby, BC, Canada
Teaching:
 - ENSC 861 – Source Coding for Digital Communications (Fall 2015)
 - ENSC 813 – Deep Learning Systems (Fall 2017, Spring 2019, 2020, 2021, 2022, 2024)
 - ENSC 808 – Information Theory (Summer 2007, Spring 2008, 2010, 2012, 2023)
 - ENSC 802 – Stochastic Systems (Fall 2010, 2011, 2012, 2016, 2021, 2022, 2023)
 - ENSC 429 – Digital Signal Processing (Summer 2023)
 - ENSC 428 – Digital Communications (Spring 2009, Summer 2014, Spring 2018, 2020)
 - ENSC 424 – Multimedia Communications Engineering (Fall 2006-2011, Fall 2018)
 - ENSC 380 – Linear Systems (Spring 2006, 2007, 2015, Fall 2019)
 - ENSC 180 – Introduction to Engineering Analysis Tools (Spring 2015)
- **Consultant** (2008 – present) to Canadian and US industry on multimedia signal processing, coding, and streaming
- **Visiting Assistant Professor** (2003 – 2005), ECE Department, University of Miami, Coral Gables, FL, USA
Teaching:
 - EEN 538 – Introduction to Digital Image Processing (Fall 2004)
 - EEN 436 – Introduction to Digital Signal Processing (Fall 2003)
 - EEN 404 – Communication Systems (Spring 2004, 2005)

Research interests

- Multimedia signal processing, coding, analysis, and communications; machine/deep learning, collaborative intelligence

Selected honors

Research

- **IEEE TCSVT Best Paper Award**, IEEE Trans. Circuits and Systems for Video Technology (2023) [International]
- **IEEE MSA TC Best Paper Award**, for an IEEE ISCAS paper (2023) [International]
- **Best Paper Runner-up**, IEEE International Symposium on Biomedical Imaging – ISBI (2023) [International]
- **Best Paper – Honorable Mention**, IEEE MMSP (2022) [International]
- **TIP Featured Article**, IEEE Trans. Image Processing (2021) [International]
- **TMM Featured Article**, IEEE Trans. Multimedia (2021) [International]
- **Discovery Accelerator Award**, Natural Sciences and Engineering Research Council – NSERC (2021) [National]
- **Best Student Paper Finalist**, Asilomar Conference on Signals, Systems, and Computers (2020) [International]
- **Best Student Paper Award**, IEEE International Conference on Image Processing - ICIP (2019) [International]
- **Front Cover** of the July/August issue of IEEE/ACM Trans. Audio, Speech, Language Process. (2016) [International]
- **Best Paper Finalist**, IEEE International Conference on Multimedia & Expo - ICME (2013) [International]
- **Best Paper Runner-up Award**, IEEE International Conference on Multimedia & Expo - ICME (2012) [International]
- **SFU Endowed Research Fellow**, Simon Fraser University (2005-2006) [Institutional]
- **IBM Research Student Travel Grant**, IEEE International Conf. on Image Processing - ICIP (2003) [International]
- **South African National Research Foundation Scholar** (1999-2003) [National]

Leadership

- **Chapter of the Year Award**, IEEE Signal Processing Society Award to Vancouver Chapter (2017) [International]
- **Best Small Chapter Award**, IEEE Vancouver Section Award for Leadership of SPS Vancouver Chapter (2015) [Regional]

Service

- **Outstanding Service Award**, IEEE ICME (2021) [International]
- **Outstanding Area Chair Award**, IEEE ICME (2020) [International]
- **Outstanding Reviewer Award**, IEEE ICME (2011, 2014), IEEE VCIP (2012, 2013), IEEE ICASSP (2019, 2022) [International]

Teaching

- **Outstanding Teaching Assistant Award**, ECSE Department, Rensselaer Polytechnic Institute (2000) [Departmental]

Professional activities and service

- Registered Professional Engineer in the Province of British Columbia (2007 – present)
- Senior Member of IEEE
- Chair (2013-2018) and Vice-Chair (2019 – 2021) of the IEEE Signal Processing Society Vancouver Chapter

Technical committees:

- IEEE Multimedia Signal Processing Technical Committee
 - Member (2017 – present)
 - Past Chair (2024), Chair (2022 – 2023), Vice Chair (2021 – 2022)
- IEEE Multimedia Systems and Applications Technical Committee – Member (2016 – present)
- IEEE Multimedia Communications Technical Committee – Member
 - Chair of the Media Streaming Interest Group (MSIG) (2010 – 2012)
- IEEE Multimedia Computing Technical Committee – Member
- IEEE Image, Video, and Multidimensional Signal Processing Technical Committee – Affiliate Member

Journals:

- Senior Area Editor of *IEEE Signal Processing Letters* (2020 – present)
- Area Editor of *Signal Processing: Image Communication* (2018 – 2021)
- Associate Editor of *IEEE Signal Processing Magazine* (2015 – 2021)
- Associate Editor of *IEEE Transactions on Multimedia* (2016 – 2018)
- Lead Guest Editor for the *IEEE Communications Magazine*, special issue on "Interactive 3D Video Streaming" (2013)
- Reviewer for various journals: IEEE Trans. Image Processing, IEEE Trans. Signal Processing, IEEE Trans. Circuits Syst. Video Technol., IEEE Trans. Multimedia, IEEE Trans. Pattern Analysis and Machine Intelligence, and 20+ others

Conferences (senior roles only):

- TPC Chair, IEEE ICME 2025, Nantes, France
- TPC Co-Chair for Picture Coding Symposium (PCS) 2022, San Jose, CA
- General Co-Chair for IEEE MMSP 2022, Shanghai, China (virtual)
- General Co-Chair for IEEE DSLW 2022, Singapore (virtual)
- Workshops Chair for IEEE ICME 2021, Shenzhen, China
- TPC Co-Chair for IEEE Data Science and Learning Workshop (DSLW) 2021, Toronto, Canada (virtual)
- TPC Co-Chair for IEEE MMSP 2018, Vancouver, BC
- Student Program Chair for IEEE ICME 2016, IEEE GlobalSIP 2017 (organized first 3MT at each conference)
- Special Sessions Co-Chair for IEEE ICME 2015, Torino, Italy
- General Co-Chair of the IEEE Signal Processing Society Summer School on "Signal Processing and Machine Learning for Big Data," Vancouver, BC, July-August 2014

Funding agencies:

- Co-Chair (2019 – 2020, 2021 – 2022) and Member (2018 – 2019) of the NSERC Discovery Evaluation Group 1510 (Electrical and Computer Engineering)
- Reviewer for various funding agencies: Natural Sciences and Engineering Research Council (NSERC), Mathematics of Information Technology and Complex Systems (MITACS), Qatar National Research Fund (QNRF), Portuguese Foundation for Science and Technology (FCT), etc.

Publications

Journal papers:

- [1] H. Naderi and I. V. Bajić, "Adversarial attacks and defenses on 3D point cloud classification: A survey," *IEEE Access*, vol. 11, pp. 144274-144295, Dec. 2023.
- [2] W.-H. Cheng, J.-N. Hwang, I. Bajić, R. Kawakami, S. Wang, J. Liu, "Emerging AI technologies for smart infrastructure," *APSIPA Trans. Signal and Information Processing*, vol. 12, no. 4, Oct. 2023.
- [3] C. Shiranthika, P. Saeedi, and I. V. Bajić, "Decentralized learning in healthcare: A review of emerging techniques," *IEEE Access*, vol. 11, pp. 54188-54209, Jun. 2023.

- [4] I. V. Bajić, M. Mrak, F. Dufaux, E. Magli and T. Chen, "Multimedia Signal Processing: A History of the Multimedia Signal Processing Technical Committee," *IEEE Signal Processing Magazine*, vol. 40, no. 4, pp. 72-79, Jun. 2023.
- [5] C. Dinesh, G. Cheung, and I. V. Bajić, "Point cloud sampling via graph balancing and Gershgorin disc alignment," *IEEE Trans. Pattern Analysis and Machine Intelligence*, vol. 45, no. 1, pp. 868-886, Jan. 2023.
- [6] N. Shlezinger and I. V. Bajić, "Collaborative inference for AI-empowered IoT devices," *IEEE Internet of Things Magazine*, vol. 5, no. 4, pp. 92-98, Dec. 2022.
- [7] S. R. Alvar, H. Choi, M. Ulhaq, and I. V. Bajić, "Joint image compression and denoising via latent-space scalability," *Frontiers in Signal Processing*, Sep. 2022.
- [8] C. Dinesh, G. Cheung, and I. V. Bajić, "Point cloud video super-resolution via partial point coupling and graph smoothness," *IEEE Trans. Image Processing*, vol. 31, pp. 4117-4132, Jun. 2022.
- [9] T. Tanaka, H. Choi, and I. V. Bajić, "Updating a dataset of labelled objects on raw video sequences with unique object IDs," *Data in Brief*, vol. 41, article no. 107892, Apr. 2022.
- [10] H. Choi and I. V. Bajić, "Scalable image coding for humans and machines," *IEEE Trans. Image Processing*, vol. 31, pp. 2739-2754, Mar. 2022.
- [11] A. Harell, R. Jones, S. Makonin, and I. V. Bajić, "TraceGAN: Synthesizing appliance power signatures using generative adversarial networks," *IEEE Trans. Smart Grid*, vol. 12, no. 5, pp. 4553-4563, Sep. 2021.
- [12] Md. Z. A. Bhotto, R. Jones, S. Makonin, and I. V. Bajić, "Short-term demand prediction using an ensemble of linearly-constrained estimators," *IEEE Trans. Power Systems*, vol. 36, no. 4, pp. 3163-3175, Jul. 2021.
- [13] R. A. Cohen, H. Choi, and I. V. Bajić, "Lightweight compression of intermediate neural network features for collaborative intelligence," *IEEE Open J. Circuits Syst.*, vol. 2, pp. 350-362, May 2021. (Special Section on ICME 2021)
- [14] H. Choi and I. V. Bajić, "Affine transformation-based deep frame prediction," *IEEE Trans. Image Processing*, vol. 30, pp. 3321-3334, Feb. 2021. **(TIP Featured Article)**
- [15] S. R. Alvar and I. V. Bajić, "Pareto-optimal bit allocation for collaborative intelligence," *IEEE Trans. Image Processing*, vol. 30, pp. 3348-3361, Feb. 2021.
- [16] H. Choi, E. Hosseini, S. R. Alvar, R. A. Cohen, and I. V. Bajić, "A dataset of labelled objects on raw video sequences," *Data in Brief*, vol. 34, article no. 106701, Feb. 2021.
- [17] H. Hadizadeh and I. V. Bajić, "Soft video multicasting using adaptive compressed sensing," *IEEE Trans. Multimedia*, vol. 23, pp. 12-25, Jan. 2021. **(TMM Featured Article)**
- [18] C. Dinesh, G. Cheung, and I. V. Bajić, "Point cloud denoising via feature graph Laplacian regularization," *IEEE Trans. Image Processing*, vol. 29, pp. 4143-4158, Dec. 2020.
- [19] Y. Wang, Y. Wu, J. Liang, I. V. Bajić, and A. Wang, "Light field all-in-focus image fusion based on spatially-guided angular information," *J. Vis. Commun. Image R.*, vol. 72, article no. 102878, Oct. 2020.
- [20] H. Choi and I. V. Bajić, "Deep frame prediction for video coding," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 30, no. 7, pp. 1843-1855, Jul. 2020. **(IEEE TCSVT Best Paper Award)**
- [21] C. Dinesh, S. Makonin, and I. V. Bajić, "Residential power forecasting based on affinity aggregation spectral clustering," *IEEE Access*, vol. 8, pp. 99431-99444, May 2020.
- [22] L. Bragilevsky and I. V. Bajić, "Tensor completion methods for collaborative intelligence," *IEEE Access*, vol. 8, pp. 41162-41174, Feb. 2020.
- [23] J. Fu, I. V. Bajić, and R. G. Vaughan, "Datasets for face and object detection in fisheye images," *Data in Brief*, vol. 27, article no. 104752, Dec. 2019.
- [24] M. Gaur, S. Makonin, I. V. Bajić, and A. Majumdar, "Performance evaluation of techniques for identifying abnormal energy consumption in buildings," *IEEE Access*, vol. 7, pp. 62721-62733, May 2019.
- [25] X. Shang, G. Wang, X. Zhao, Y. Zuo, J. Liang, and I. V. Bajić, "Weighting quantization matrices for HEVC/H.265-coded RGB videos," *IEEE Access*, vol. 7, pp. 36019-36032, Apr. 2019.
- [26] C. Dinesh, S. Makonin, and I. V. Bajić, "Residential power forecasting using load identification and graph spectral clustering," *IEEE Trans. Circuits and Systems II: Express Briefs*, vol. 66, no. 11, pp. 1900-1904, Nov. 2019.
- [27] H. Hadizadeh, A. R. Heravi, I. V. Bajić, and P. Karami, "A perceptual distinguishability predictor for JND-noise-contaminated images," *IEEE Trans. Image Processing*, vol. 28, no. 5, pp. 2242-2256, May 2019.
- [28] C. Dinesh, I. V. Bajić, and G. Cheung, "Adaptive nonrigid inpainting of 3D point cloud geometry," *IEEE Signal Processing Letters*, vol. 25, no. 6, pp. 878-882, Jun. 2018.
- [29] H. Hadizadeh and I. V. Bajić, "Full-reference objective quality assessment of tone-mapped images," *IEEE Trans. Multimedia*, vol. 20, no. 2, pp. 392-404, Feb. 2018.
- [30] S. H. Khatoonabadi, I. V. Bajić, and Y. Shan, "Compressed-domain visual saliency models: A comparative study," *Multimedia Tools and Applications*, vol. 76, no. 24, pp. 26297-26328, Dec. 2017.

- [31] H. Hadizadeh, A. Rajati, and I. V. Bajić, "Saliency-guided just noticeable distortion estimation using the normalized Laplacian pyramid," *IEEE Signal Processing Letters*, vol. 24, no. 8, pp. 1218-1222, Aug. 2017.
- [32] M. Z. A. Bhotto, S. Makonin, and I. V. Bajić, "Load disaggregation based on aided linear integer programming," *IEEE Trans. Circuits and Systems II: Express Briefs*, vol. 64, no. 7, pp. 792-796, Jul. 2017.
- [33] C.-H. Kwak and I. V. Bajić, "Online MoCap data coding with bit allocation, rate control, and motion-adaptive post-processing," *IEEE Trans. Multimedia*, vol. 19, no. 6, pp. 1127-1141, Jun. 2017.
- [34] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "A simulation study of a 3D sound field reproduction system for immersive communication," *IEEE/ACM Trans. Audio, Speech, Language Process.*, vol. 25, no. 5, pp. 980-995, May 2017.
- [35] H. Hadizadeh and I. V. Bajić, "Color Gaussian jet features for no-reference quality assessment of multiply-distorted images," *IEEE Signal Processing Letters*, vol. 23, no. 12, pp. 1717-1721, Dec. 2016.
- [36] S. Makonin, F. Popowich, I. V. Bajić, B. Gill, and L. Bartram, "Exploiting HMM sparsity to perform online real-time nonintrusive load monitoring (NILM)," *IEEE Trans. Smart Grid*, vol. 7, no. 6, pp. 2575-2585, Nov. 2016.
- [37] H. Hadizadeh and I. V. Bajić, "No-reference image quality assessment using statistical wavelet packet features," *Pattern Recognition Letters*, vol. 80, pp. 144-149, Sep. 2016.
- [38] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "Comparison of loudspeaker placement methods for sound field reproduction," *IEEE/ACM Trans. Audio, Speech, Language Process.*, vol. 24, no. 8, pp. 1364 - 1379, Aug. 2016. **(Front Cover of the July/August issue)**
- [39] S. Makonin, B. Ellert, I. V. Bajić, and F. Popowich, "Electricity, water, and natural gas consumption of a residential house in Canada from 2012 to 2014," *Scientific Data* (Nature Publishing Group), vol. 3, article no. 160037, Jun. 2016.
- [40] V. A. Mateescu and I. V. Bajić, "Visual attention retargeting," *IEEE MultiMedia*, vol. 23, no. 1, pp. 82-91, Jan.-Mar. 2016.
- [41] S. H. Khatoonabadi, I. V. Bajić, and Y. Shan, "Compressed-domain correlates of human fixations in dynamic scenes," *Multimedia Tools and Applications*, vol. 74, no. 22, pp. 10057-10075, Nov. 2015. (Special Issue on Perception Inspired Video Processing)
- [42] K.-Y. Min, W. Lim, J. Nam, D. Sim, and I. V. Bajić, "Distributed video coding supporting hierarchical GOP structures with transmitted motion vectors," *EURASIP J. Image and Video Processing*, 2015:12, May 2015.
- [43] Md. Z. A. Bhotto and I. V. Bajić, "Constant modulus blind adaptive beamforming based on unscented Kalman filtering," *IEEE Signal Processing Letters*, vol. 22, no. 4, pp. 474-478, Apr. 2015.
- [44] K. Min, J. Ma, D. Sim, and I. V. Bajić, "Bi-directional mesh-based frame rate up-conversion with a dense motion vector map," *IEEE MultiMedia*, vol. 22, no. 2, pp. 36-45, Apr.-Jun. 2015.
- [45] H. Hadizadeh and I. V. Bajić, "Saliency-aware video compression," *IEEE Trans. Image Processing*, vol. 23, no. 1, pp. 19-33, Jan. 2014.
- [46] H. Choi, J. Yoo, J. Nam, D. Sim, and I. V. Bajić, "Pixel-wise unified rate-quantization model for multi-level rate control," *IEEE J. Sel. Topics Signal Process.*, vol. 7, no. 6, pp. 1112-1123, Dec. 2013. (Special Issue on Video Coding: HEVC and Beyond)
- [47] H. Hadizadeh, I. V. Bajić, and G. Cheung, "Video error concealment using a computation-efficient low saliency prior," *IEEE Trans. Multimedia*, vol. 15, no. 8, pp. 2099-2113, Dec. 2013.
- [48] H. Khalilian and I. V. Bajić, "Video watermarking with empirical PCA-based decoding," *IEEE Trans. Image Processing*, vol. 22, no. 12, pp. 4825-4840, Dec. 2013.
- [49] P. Wan, Y. Feng, G. Cheung, I. V. Bajić, and O. C. Au, "3D motion estimation for visual saliency modeling," *IEEE Signal Processing Letters*, vol. 20, no. 10, pp. 972-975, Oct. 2013.
- [50] S. H. Khatoonabadi and I. V. Bajić, "Video object tracking in the compressed domain using spatio-temporal Markov random fields," *IEEE Trans. Image Processing*, vol. 22, no. 1, pp. 300-313, Jan. 2013.
- [51] H. Hadizadeh, M. J. Enriquez, and I. V. Bajić, "Eye-tracking database for a set of standard video sequences," *IEEE Trans. Image Processing*, vol. 21, no. 2, pp. 898-903, Feb. 2012.
- [52] H. Hadizadeh and I. V. Bajić, "Burst-loss-resilient packetization of video," *IEEE Trans. Image Processing*, vol. 20, no. 11, pp. 3195-3206, Nov. 2011.
- [53] Y.-M. Chen and I. V. Bajić, "A joint approach to global motion estimation and motion segmentation from a coarsely sampled motion vector field," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 21, no. 9, pp. 1316-1328, Sep. 2011.
- [54] H. Hadizadeh and I. V. Bajić, "Rate-distortion optimized pixel-based motion vector concatenation for reference picture selection," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 21, no. 8, pp. 1139-1151, Aug. 2011.
- [55] Y.-M. Chen, I. V. Bajić, and P. Saeedi, "Moving region segmentation from compressed video using global motion estimation and Markov random fields," *IEEE Trans. Multimedia*, vol. 13, no. 3, pp. 421-431, Jun. 2011. (Special Issue on ICME 2010)

- [56] W. Zhang, X. Shao, M. Torki, A. HajShirmohammadi, and I. V. Bajić, "Unequal error protection of JPEG2000 images using short block length turbo codes," *IEEE Commun. Letters*, vol. 15, no. 6, pp. 659-661, Jun. 2011.
- [57] I. V. Bajić and X. Ma, "A testbed and methodology for comparing live video frame rate control methods," *IEEE Signal Processing Letters*, vol. 18, no. 1, pp. 31-34, Jan. 2011.
- [58] S. Bahmani, I. V. Bajić, and A. HajShirmohammadi, "Joint decoding of unequally protected JPEG2000 bitstreams and Reed-Solomon codes," *IEEE Trans. Image Processing*, vol. 19, no. 10, pp. 2693-2704, Oct. 2010.
- [59] Y.-M. Chen and I. V. Bajić, "Region-based predictive decoding of video," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 20, no. 3, pp. 452-457, Mar. 2010.
- [60] Y.-M. Chen and I. V. Bajić, "Motion vector outlier rejection cascade for global motion estimation," *IEEE Signal Processing Letters*, vol. 17, no. 2, pp. 197-200, Feb. 2010.
- [61] Y. Shan, I. V. Bajić, J. W. Woods, and S. Kalyanaraman, "Scalable video streaming with fine grain adaptive forward error correction," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 19, no. 9, pp. 1302-1314, Sep. 2009.
- [62] I. V. Bajić and J. W. Woods, "Error concealment for scalable motion-compensated subband/wavelet video coders," *IEEE Trans. Circuits Syst. Video Technol.*, vol. 17, no. 4, pp. 508-514, Apr. 2007.
- [63] I. V. Bajić, "Efficient cross-layer error control for wireless video multicast," *IEEE Trans. Broadcasting*, vol. 53, no. 1, part 2, pp. 276-285, Mar. 2007. (Special Issue on Mobile Multimedia Broadcasting)
- [64] I. V. Bajić, "Noncausal error control for video streaming over wireless packet networks," *IEEE Trans. Multimedia*, vol. 8, no. 6, pp. 1263-1273, Dec. 2006.
- [65] P. Luykx, I. V. Bajić, and S. Khuri, "NXSensor web tool for evaluating DNA for nucleosome exclusion sequences and accessibility to binding factors," *Nucleic Acids Research*, vol. 34, Web Server issue, pp. W560-W565, Jul. 2006.
- [66] I. V. Bajić, "Detection-theoretic analysis of MatInspector," *IEEE Trans. Signal Processing*, vol. 54, no. 6, part 2, pp. 2388-2393, Jun. 2006. (Special Issue on Genomic Signal Processing)
- [67] I. V. Bajić, "Adaptive MAP error concealment for dispersively packetized wavelet-coded images," *IEEE Trans. Image Processing*, vol. 15, no. 5, pp. 1226-1235, May 2006.
- [68] Y. Shan, I. V. Bajić, S. Kalyanaraman, and J. W. Woods, "Overlay multi-hop FEC scheme for video streaming," *Signal Processing: Image Commun.*, vol. 20, no. 8, pp. 710-727, Sep. 2005. (Special Issue on Video Networking)
- [69] I. V. Bajić and J. W. Woods, "Domain-based multiple description coding of images and video," *IEEE Trans. Image Processing*, vol. 12, no. 10, pp. 1211-1225, Oct. 2003.
- [70] I. V. Bajić and J. W. Woods, "Maximum minimal distance partitioning of the Z^2 lattice," *IEEE Trans. Inform. Theory*, vol. 49, no. 4, pp. 981-992, Apr. 2003.

Conference papers:

- [1] M. Ulhaq and I. V. Bajić, "Scalable human-machine point cloud compression," accepted for presentation at *Picture Coding Symposium*, Taichung, Taiwan, June 2024.
- [2] D.-Y. Shin, T. Woinoski, I. V. Bajić, and S.-W. Lee, "A deep multi-object tracking technique in swimming video scenes," *Proc. IEEE ICCE-Asia*, Busan, Korea, Oct. 2023.
- [3] C. Shiranthika, Z. Hafezi Kafshgari, P. Saeedi, and I. V. Bajić, "SplitFed resilience to packet loss: Where to split, that is the question," *Proc. MICCAI Workshop on Distributed, Collaborative and Federated Learning*, Vancouver, BC, Canada, Oct. 2023. (**Spotlight Paper**)
- [4] Y. Foroutan, A. Harell, A. de Andrade, and I. V. Bajić, "Base layer efficiency in scalable human-machine coding," *Proc. IEEE ICIP*, Kuala Lumpur, Malaysia, Oct. 2023.
- [5] K. Uyanik, S. F. Yeganli, and I. V. Bajić, "Grad-FEC: Unequal loss protection of deep features in collaborative intelligence," *Proc. IEEE ICIP*, Kuala Lumpur, Malaysia, Oct. 2023.
- [6] I. V. Bajić, T. Saeedi-Bajić and K. Saeedi-Bajić, "Metaverse: A young gamer's perspective," *Proc. IEEE MMSP*, Poitiers, France, Sept. 2023.
- [7] M. Ulhaq and I. V. Bajić, "Learned point cloud compression for classification," *Proc. IEEE MMSP*, Poitiers, France, Sept. 2023.
- [8] A. Harell, Y. Foroutan, and I. V. Bajić, "VVC+M: Plug and play scalable image coding for humans and machines," *Proc. IEEE ICME Workshop on Coding for Machines*, Brisbane, Australia, Jul. 2023.
- [9] A. de Andrade, A. Harell, Y. Foroutan, and I. V. Bajić, "Conditional and residual methods in scalable coding for humans and machines," *Proc. IEEE ICME Workshop on Coding for Machines*, Brisbane, Australia, Jul. 2023.
- [10] C. Lee, T. Woinoski, and I. V. Bajić, "Decomposed key-point detector for swimming pool localization," *Proc. IEEE ICME Workshop on AI in Sports*, Brisbane, Australia, Jul. 2023.

- [11] H. Hadizadeh and I. V. Bajić, "LCCM-VC: Learned conditional coding modes for video compression," *Proc. IEEE ICASSP'23 Workshops*, Rhodes Island, Greece, Jun. 2023.
- [12] Z. Hafezi Kafshgari, I. V. Bajić, and P. Saeedi, "Smart split-federated learning over noisy channels for embryo image segmentation," *Proc. IEEE ICASSP'23*, Rhodes Island, Greece, Jun. 2023.
- [13] R. Zamanshoar Heris and I. V. Bajić, "Multi-task learning for screen content image coding," *Proc. IEEE ISCAS'23*, Monterey, CA, USA, May 2023. **(IEEE MSA TC Best paper Award)**
- [14] Z. Hafezi Kafshgari, C. Shiranthika, P. Saeedi, and I. V. Bajić, "Quality-adaptive split-federated learning for segmenting medical images with inaccurate annotations," *Proc. IEEE ISBI'23*, Cartagena des Indias, Colombia, Apr. 2023. **(Best Paper Runner-up)**
- [15] B. Azizian and I. V. Bajić, "Privacy-preserving feature coding for machines," *Proc. Picture Coding Symposium (PCS)*, San Jose, CA, USA, Dec. 2022.
- [16] A. Harell, A. de Andrade, and I. V. Bajić, "Rate-distortion in image coding for machines," *Proc. Picture Coding Symposium (PCS)*, San Jose, CA, USA, Dec. 2022.
- [17] T. Woinoski and I. V. Bajić, "Towards automated key-point detection in images with partial pool view," *Proc. ACM MMSports*, pp. 9-17, Lisbon, Portugal, Oct. 2022.
- [18] H. Choi, and I. V. Bajić, "Scalable video coding for humans and machines," *Proc. IEEE MMSP'22*, Shanghai, China, Sep. 2022. **(Best Paper – Honorable Mention)**
- [19] S. R. Alvar, K. Uyanik, and I. V. Bajić, "License plate privacy in collaborative visual analysis of traffic scenes," *Proc. IEEE MIPR'22*, Aug. 2022. (Invited paper)
- [20] T. Tanaka, A. Harell, and I. V. Bajić, "Does video compression impact tracking accuracy?" *Proc. IEEE ISCAS'22*, May-June 2022.
- [21] C. Dinesh, S. Bagheri, G. Cheung, and I. V. Bajić, "Linear-time sampling on signed graphs via Gershgorin disc perfect alignment," *Proc. IEEE ICASSP'22*, pp. 5942-5946, May 2022.
- [22] S. R. Alvar and I. V. Bajić, "Scalable privacy in multi-task image compression," *Proc. IEEE VCIP'21*, Munich, Germany, Dec. 2021.
- [23] A. Dhondea, R. A. Cohen, and I. V. Bajić, "DFTS2: Deep feature transmission simulation for collaborative intelligence," *Proc. IEEE VCIP'21*, Munich, Germany, Dec. 2021.
- [24] H. Choi, and I. V. Bajić, "Latent-space scalability for multi-task collaborative intelligence," *Proc. IEEE ICIP'21*, pp. 3562-3566, Anchorage, AK, Sep. 2021.
- [25] A. Dhondea, R. A. Cohen, and I. V. Bajić, "CALTeC: Content-adaptive linear tensor completion for collaborative intelligence," *Proc. IEEE ICIP'21*, pp. 2179-2183, Anchorage, AK, Sep. 2021.
- [26] T. Woinoski and I. V. Bajić, "Swimmer stroke rate estimation from overhead race video," *Proc. ICME Workshop on Artificial Intelligence in Sports (AI-Sports)*, Shenzhen, China, Jul. 2021.
- [27] I. V. Bajić, "Latent space inpainting for loss-resilient collaborative object detection," *Proc. IEEE ICC'21*, Montreal, Canada, Jun. 2021.
- [28] I. V. Bajić, W. Lin, and Y. Tian, "Collaborative intelligence: challenges and opportunities," *Proc. IEEE ICASSP'21*, pp. 8493-8497, Toronto, Canada, Jun. 2021.
- [29] M. Ulhaq and I. V. Bajić, "Latent space motion analysis for collaborative intelligence," *Proc. IEEE ICASSP'21*, pp. 8498-8502, Toronto, Canada, Jun. 2021.
- [30] S. Lee and I. V. Bajić, "Information flow through U-Nets," *Proc. IEEE ISBI'21*, pp. 812-816, Apr. 2020.
- [31] R. Jones, C. Klemenjak, S. Makonin, and I. V. Bajić, "Stop! Exploring Bayesian surprise to better train NILM," *Proc. 5th Int. Workshop on Non-Intrusive Load Monitoring (NILM'20)*, pp. 39-43, Nov. 2020.
- [32] H. Choi and I. V. Bajić, "A lightweight model for deep frame prediction in video coding," *Proc. Asilomar Conference on Signals, Systems, and Computers*, Pacific Grove, CA, Nov. 2020. **(Best Student Paper Finalist)**
- [33] C. Dinesh, G. Cheung, F. Wang, and I. V. Bajić, "Sampling of 3D point cloud via Gershgorin disc alignment," *Proc. IEEE ICIP'20*, pp. 2736-2740, Abu Dhabi, UAE, Oct. 2020.
- [34] R. A. Cohen, H. Choi, and I. V. Bajić, "Lightweight compression of neural network feature tensors for collaborative intelligence," *Proc. IEEE ICME'20*, London, UK, Jul. 2020.
- [35] H. Choi, R. A. Cohen, and I. V. Bajić, "Back-and-forth prediction for deep tensor compression," *Proc. IEEE ICASSP'20*, pp. 4467-4471, Barcelona, Spain, May 2020.
- [36] S. R. Alvar and I. V. Bajić, "Bit allocation for multi-task collaborative intelligence," *Proc. IEEE ICASSP'20*, pp. 4342-4346, Barcelona, Spain, May 2020.
- [37] C. Dinesh, G. Cheung, and I. V. Bajić, "Super-resolution of 3D color point clouds via fast graph total variation," *Proc. IEEE ICASSP'20*, pp. 1983-1987, Barcelona, Spain, May 2020.

- [38] T. Woinoski, A. Harell, and I. V. Bajić, "Towards automated swimming analytics using deep neural networks," *AAAI Workshop on AI in Team Sports*, New York, NY, Feb. 2020.
- [39] A. Harell and I. V. Bajić, "The data gap in sports analytics and how to close it," *AAAI Workshop on AI in Team Sports*, New York, NY, Feb. 2020.
- [40] E. Ideli, B. Sharpe, I. V. Bajić, and R. G. Vaughan, "Visually assisted time-domain speech enhancement," *Proc. IEEE GlobalSIP'19*, Ottawa, ON, Nov. 2019.
- [41] C. Dinesh, G. Cheung, and I. V. Bajić, "3D point cloud color denoising using convex graph-signal smoothness priors," *Proc. IEEE MMSP'19*, Kuala Lumpur, Malaysia, Sep. 2019.
- [42] S. R. Alvar and I. V. Bajić, "Multi-task learning with compressible features for collaborative intelligence," *Proc. IEEE ICIP'19*, pp. 1705-1709, Taipei, Taiwan, Sep. 2019. (**Best Student Paper Award**)
- [43] C. Dinesh, G. Cheung, and I. V. Bajić, "3D point cloud super-resolution via graph total variation on surface normals," *Proc. IEEE ICIP'19*, pp. 4390-4394, Taipei, Taiwan, Sep. 2019. (**Spotlight Paper**)
- [44] A. Harell, S. Makonin, and I. V. Bajić, "WaveNILM: A causal neural network for power disaggregation from the complex power signal," *Proc. IEEE ICASSP'19*, pp. 8335-8339, Brighton, UK, May 2019.
- [45] J. Fu, S. R. Alvar, I. V. Bajić, and R. G. Vaughan, "FDDB-360: Face detection in 360-degree fisheye images," *Proc. IEEE MIPR'19*, pp. 15-19, San Jose, CA, Mar. 2019. (Invited)
- [46] E. Ideli, R. G. Vaughan, and I. V. Bajić, "Speech intelligibility of microphone arrays in reverberant environments with interference," *Proc. IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [47] H. Choi and I. V. Bajić, "Near-lossless deep feature compression for collaborative intelligence," *Proc. IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [48] C. Dinesh, G. Cheung, I. V. Bajić, and C. Yang, "Fast 3D point cloud denoising via bipartite graph approximation and total variation," *Proc. IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [49] S. R. Alvar and I. V. Bajić, "MV-YOLO: Motion vector-aided tracking by semantic object detection," *Proc. IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [50] H. Choi and I. V. Bajić, "Deep feature compression for collaborative object detection," *Proc. IEEE ICIP'18*, pp. 3743-3747, Athens, Greece, Oct. 2018. (**IEEE SPS Student Travel Grant**)
- [51] S. R. Alvar, H. Choi, and I. V. Bajić, "Can you find a face in a HEVC bitstream?" *Proc. IEEE ICASSP'18*, pp. 1288-1292, Calgary, AB, Apr. 2018. (**Featured in IEEE Signal Processing Magazine, May 2020**)
- [52] H. Choi and I. V. Bajić, "High efficiency compression for object detection," *Proc. IEEE ICASSP'18*, pp. 1729-1796, Calgary, AB, Apr. 2018.
- [53] S. R. Alvar, H. Choi, and I. V. Bajić, "Can you tell a face from a HEVC bitstream?" *Proc. IEEE MIPR'18*, Miami, FL, Apr. 2018. (Invited)
- [54] C. Dinesh, I. V. Bajić, and G. Cheung, "Exemplar-based framework for 3D point cloud hole filling," *Proc. IEEE VCIP'17*, pp. 1-4, St. Petersburg, FL, Dec. 2017.
- [55] H. Choi and I. V. Bajić, "HEVC intra features for human detection," *Proc. IEEE GlobalSIP'17*, pp. 393-397, Montreal, QC, Nov. 2017.
- [56] C. Dinesh, S. Makonin, and I. V. Bajić, "Incorporating time-of-day usage patterns into non-intrusive load monitoring," *Proc. IEEE GlobalSIP'17*, pp. 1110-1114, Montreal, QC, Nov. 2017.
- [57] L. Bragilevsky and I. V. Bajić, "Deep learning for Amazon satellite image analysis," *Proc. IEEE PacRim'17*, Victoria, BC, Aug. 2017.
- [58] J. Lin and I. V. Bajić, "Automatic image cropping based on bottom-up saliency and top-down semantics," *Proc. IEEE PacRim'17*, Victoria, BC, Aug. 2017.
- [59] H. Choi and I. V. Bajić, "Corner proposals from HEVC bitstreams," *Proc. IEEE ISCAS'17*, pp. 1-4, Baltimore, MD, May 2017.
- [60] M. P. Stapleton and I. V. Bajić, "Robust domain-filling plumb-line lens distortion correction," *Proc. IEEE ISM'16*, pp. 507-514, San Jose, CA, Dec. 2016. (Invited)
- [61] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "Learning to reproduce a sound field," presented at *IEEE MLSP'16*, Salerno, Italy, Sep. 2016. (**MLSP Student Travel Grant**)
- [62] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "A glimpse of 3D acoustics for immersive communication," *Proc. IEEE CCECE'16*, Vancouver, BC, May 2016.
- [63] J. Lin and I. V. Bajić, "A platform for subjective image quality evaluation on mobile devices," *Proc. IEEE CCECE'16*, Vancouver, BC, May 2016.
- [64] M. P. Stapleton, M. Z. A. Bhotto, and I. V. Bajić, "A simulation environment for visual-inertial sensor fusion," *Proc. IEEE CCECE'16*, Vancouver, BC, May 2016.

- [65] R. M. Rad, P. Saeedi, and I. V. Bajić, "Automatic cleavage detection in H.264 sequence of human embryo development," *Proc. IEEE CCECE'16*, Vancouver, BC, May 2016.
- [66] S. Kheradmand, P. Saeedi, and I. V. Bajić, "Human blastocyst segmentation in compressed domain using neural network," *Proc. IEEE CCECE'16*, Vancouver, BC, May 2016.
- [67] S. H. Khatoonabadi, N. Vasconcelos, I. V. Bajić, and Y. Shan, "How many bits does it take for a stimulus to be salient?" *Proc. IEEE CVPR'15*, pp. 5501–5510, Boston, MA, Jun. 2015. **(oral presentation, 3.3% acceptance rate)**
- [68] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "Joint optimization of loudspeaker placement and radiation patterns for sound field reproduction," *Proc. IEEE ICASSP'15*, pp. 519-523, Brisbane, Australia, Apr. 2015. **(IEEE SPS Student Travel Grant)**
- [69] V. A. Mateescu and I. V. Bajić, "Can subliminal flicker guide attention in natural images?" *Proc. ACM Multimedia PIVP*, pp. 33–34, Orlando, FL, Nov. 2014.
- [70] V. A. Mateescu and I. V. Bajić, "Attention retargeting by color manipulation in images," *Proc. ACM Multimedia PIVP*, pp. 15–20, Orlando, FL, Nov. 2014.
- [71] S. H. Khatoonabadi, I. V. Bajić, and Y. Shan, "Compressed-domain correlates of fixations in video," *Proc. ACM Multimedia PIVP*, pp. 3–8, Orlando, FL, Nov. 2014.
- [72] S. H. Khatoonabadi, I. V. Bajić, and Y. Shan, "Comparison of visual saliency models for compressed video," *Proc. IEEE ICIP'14*, pp. 1081–1085, Paris, France, Oct. 2014.
- [73] C.-H. Kwak and I. V. Bajić, "Hybrid compression of dynamic 3D mesh data," *Proc. IEEE ICASSP'14*, pp. 6183-6187, Florence, Italy, May 2014.
- [74] B. Macchiavello, C. Dorea, E. Hung, G. Cheung, and I. V. Bajić, "Low-saliency prior for disocclusion hole filling in DIBR-synthesized images," *Proc. IEEE ICASSP'14*, pp. 579-583, Florence, Italy, May 2014.
- [75] S. Makonin, W. Sung, R. Dela Cruz, B. Yarrow, B. Gill, F. Popowich, and I. V. Bajić, "Inspiring energy conservation through open source metering hardware and embedded real-time load disaggregation," *Proc. IEEE PES APPEEC'13*, pp. 1-6, Hong Kong, Dec. 2013.
- [76] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "Loudspeaker placement for sound field reproduction by constrained matching pursuit," *Proc. IEEE WASPAA'13*, New Paltz, NY, Oct. 2013.
- [77] C. Qian and I. V. Bajić, "Global motion estimation under translation-zoom ambiguity," *Proc. IEEE PacRim'13*, pp. 46-51, Victoria, BC, Aug. 2013.
- [78] S. Makonin, F. Popowich, L. Bartram, B. Gill, and I. V. Bajić, "AMPds: A public dataset for load disaggregation and eco-feedback research," *Proc. IEEE EPEC'13*, Halifax, NS, Aug. 2013.
- [79] C. Qian and I. V. Bajić, "Frame rate up-conversion using global and local higher-order motion," *Proc. IEEE ICME'13*, San Jose, CA, Jul. 2013. **(Best Paper Finalist)**
- [80] V. A. Mateescu and I. V. Bajić, "Guiding visual attention by manipulating orientation in images," *Proc. IEEE ICME'13*, "Multimedia for Humanity" theme track, San Jose, CA, Jul. 2013.
- [81] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "3D sound field reproduction using diverse loudspeaker patterns," *Proc. IEEE ICME'13 Workshops*, short papers track, San Jose, CA, Jul. 2013.
- [82] S. H. Khatoonabadi and I. V. Bajić, "Still visualization of object motion in compressed video," *Proc. IEEE ICME'13 Workshops - MMIX*, San Jose, CA, Jul. 2013.
- [83] S. H. Khatoonabadi and I. V. Bajić, "Compressed-domain global motion estimation based on the normalized direct linear transform algorithm," *Proc. ITC-CSCC'13*, Yeosu, Korea, Jul. 2013.
- [84] J. Nam, I. V. Bajić, and D. Sim, "Novel motion and disparity prediction for multi-view video coding," *Proc. IEEE IVMS'13*, Seoul, Korea, June 2013.
- [85] W. Lim, I. V. Bajić, and D. Sim, "QP initialization and adaptive MAD prediction for rate control in HEVC-based multi-view video coding," *Proc. IEEE IVMS'13*, Seoul, Korea, June 2013.
- [86] C.-H. Kwak and I. V. Bajić, "MoCap data coding with unrestricted quantization and rate control," *Proc. IEEE ICASSP'13*, pp. 3741-3745, Vancouver, BC, May 2013.
- [87] P. Wan, Y. Feng, G. Cheung, I. V. Bajić, O. C. Au, and Y. Ji, "3D motion in visual saliency modeling," *Proc. IEEE ICASSP'13*, pp. 1831-1835, Vancouver, BC, May 2013.
- [88] W. Lim, I. V. Bajić, and D. Sim, "QP initialization and interview MAD prediction for rate control in HEVC-based multi-view video coding," *Proc. IEEE ICASSP'13*, pp. 2045-2049, Vancouver, BC, May 2013.
- [89] H. Khalilian, I. V. Bajić, and R. G. Vaughan, "Towards optimal loudspeaker placement for sound field reproduction," *Proc. IEEE ICASSP'13*, pp. 321-325, Vancouver, BC, May 2013.
- [90] V. A. Mateescu, H. Hadizadeh, and I. V. Bajić, "Evaluation of several visual saliency models in terms of gaze prediction accuracy on video," *Proc. IEEE Globecom'12 Workshop: QoEMC*, pp. 1304-1308, Anaheim, CA, Dec. 2012.

- [91] H. Hadizadeh, M. Fatourehchi, and I. V. Bajić, "An automatic lyrics recognition system for digital videos," presented at *IEEE MMSP'12* (On-going Work Track), Banff, AB, Sep. 2012.
- [92] H. Hadizadeh, I. V. Bajić, and G. Cheung, "Saliency-cognizant error concealment in loss-corrupted streaming video," *Proc. IEEE ICME'12*, pp. 73-78, Melbourne, Australia, Jul. 2012. (**Best Paper Runner-up Award**)
- [93] J. Nam, D. Sim, and I. V. Bajić, "HEVC-based adaptive quantization for screen content video," *Proc. IEEE BMSB'12*, Seoul, Korea, Jun. 2012.
- [94] H. Hadizadeh, I. V. Bajić, P. Saeedi, and S. Daly, "Good-looking green images," *Proc. IEEE ICIP'11*, pp. 3238-3241, Brussels, Belgium, Sep. 2011.
- [95] Y.-M. Chen and I. V. Bajić, "Spatio-temporal super-resolution from compressed video employing global and local motion," *Proc. IEEE PacRim'11*, pp. 907-912, Victoria, BC, Aug. 2011.
- [96] H. Choi, J. Nam, D. Sim, and I. V. Bajić, "Scalable video coding based on high efficiency video coding (HEVC)," *Proc. IEEE PacRim'11*, pp. 346-351, Victoria, BC, Aug. 2011.
- [97] H. Khalilian and I. V. Bajić, "Multiplicative video watermarking with semi-blind maximum likelihood decoding for copyright protection," *Proc. IEEE PacRim'11*, pp. 125-130, Victoria, BC, Aug. 2011.
- [98] J. Nam, W. Lim, D. Sim, and I. V. Bajić, "Multi-view video coding based on high efficiency video coding (HEVC)," presented at *ITC-CSCC 2011*, Gyeongju, Korea, Jun. 2011.
- [99] Y.-M. Chen and I. V. Bajić, "Predictive video decoding using GME and motion reliability," *Proc. SPIE Applications of Digital Image Processing XXXIV*, vol. 8135, San Diego, CA, Aug. 2011. (Invited)
- [100] H. Hadizadeh and I. V. Bajić, "Saliency-preserving video compression," *Proc. IEEE ICME'11 (AVCC)*, Barcelona, Spain, Jul. 2011.
- [101] C.-H. Kwak and I. V. Bajić, "Error concealment strategies for motion capture data streaming," *Proc. IEEE ICME'11 (StreamComm)*, Barcelona, Spain, Jul. 2011.
- [102] C.-H. Kwak and I. V. Bajić, "Hybrid low-delay compression of motion capture data," *Proc. IEEE ICME'11*, Barcelona, Spain, Jul. 2011.
- [103] Y.-M. Chen, I. V. Bajić, and P. Saeedi, "Motion segmentation in compressed video using Markov random fields," *Proc. IEEE ICME'10*, pp. 760-765, Singapore, July 2010.
- [104] H. Hadizadeh and I. V. Bajić, "Pixel-based motion vector concatenation for reference picture selection," *Proc. IEEE ICME'10*, pp. 209-213, Singapore, July 2010.
- [105] I. V. Bajić and X. Ma, "MCLJIT library for scalable live video in Max/MSP/Jitter," *Proc. IEEE CCECE 2010*, Calgary, AB, May 2010.
- [106] Y.-M. Chen and I. V. Bajić, "Predictive video decoding based on ordinal depth of moving regions," *Proc. IEEE ICC'10*, Cape Town, South Africa, May 2010.
- [107] H. Hadizadeh and I. V. Bajić, "Burst loss resilient packetization of video," *Proc. IEEE ICC'10*, Cape Town, South Africa, May 2010.
- [108] Y.-M. Chen and I. V. Bajić, "Compressed-domain moving region segmentation with pixel precision using motion integration," *Proc. IEEE PacRim'09*, pp. 442-447, Victoria, BC, Aug. 2009.
- [109] Y.-M. Chen, I. V. Bajić, and C. Qian, "Frame rate up-conversion of compressed video using region segmentation and depth ordering," *Proc. IEEE PacRim'09*, pp. 431-436, Victoria, BC, Aug. 2009.
- [110] S. M. Amiri and I. V. Bajić, "Subset selection in Type-II hybrid ARQ/FEC for video multicast," *Proc. IEEE ICC'09*, Dresden, Germany, Jun. 2009.
- [111] S. Bahmani, I. V. Bajić, and A. HajShirmohammadi, "Improved joint source-channel decoding of JPEG2000 images and Reed-Solomon codes," *Proc. IEEE ICC'09*, Dresden, Germany, Jun. 2009.
- [112] Y.-M. Chen, I. V. Bajić, and P. Saeedi, "Coarse-to-fine moving region segmentation in compressed video," *Proc. IEEE WIAMIS'09*, pp. 45-48, London, UK, May 2009.
- [113] S. M. Amiri and I. V. Bajić, "A novel noncausal whole-frame concealment algorithm for video streaming," *Proc. IEEE ISM'08*, pp. 154-159, Berkeley, CA, Dec. 2008.
- [114] S. M. Amiri and I. V. Bajić, "A two-stage H.264/AVC encoder for video streaming with fast reference picture selection," *Proc. ACM WMuNeP'08*, pp. 37-44, Vancouver, BC, Oct. 2008.
- [115] S. Bahmani, I. V. Bajić, and A. HajShirmohammadi, "Joint source-channel decoding of JPEG2000 images with unequal loss protection," *Proc. IEEE ICASSP'08*, pp. 1365-1368, Las Vegas, NV, Apr. 2008.
- [116] Y.-M. Chen and I. V. Bajić, "Predictive decoding for delay reduction in video communications," *Proc. IEEE Globecom'07*, pp. 2053-2057, Washington, DC, Nov. 2007.
- [117] I. V. Bajić, "The effects of channel correlation on the performance of some multiple description schemes," *Proc. Canadian Workshop on Information Theory (CWIT'07)*, pp. 93-96, Edmonton, AB, Canada, Jun. 2007.

- [118] I. V. Bajić, "Efficient error control for wireless video multicast," *Proc. IEEE Workshop on Multimedia Signal Processing (MMSP'06)*, pp. 306-309, Victoria, BC, Canada, Oct. 2006.
- [119] I. V. Bajić, "Non-causal error control for wireless video streaming with noncoherent signaling," *Proc. IEEE ISCAS'06*, pp. 690-693, Kos Island, Greece, May 2006.
- [120] Y. Shan, S. Kalyanaraman, J. W. Woods, and I. V. Bajić, "Joint source-network coding for scalable overlay video streaming," *Proc. IEEE ICIP'05*, vol. 1, pp. 177-180, Genova, Italy, Sep. 2005. (Among **top 10%** of papers)
- [121] X. Yu, J. W. Modestino, and I. V. Bajić, "Performance analysis of the efficacy of packet-level FEC in improving video transport over networks," *Proc. IEEE ICIP'05*, vol. 2, pp. 177-180, Genova, Italy, Sep. 2005.
- [122] X. Yu, J. W. Modestino, and I. V. Bajić, "Modeling and analysis of multipath video transport over lossy networks using packet-level FEC," *Proc. 11th Int. Conf. on Distributed Multimedia Systems (DMS'05)*, pp. 265-270, Banff, Canada, Sep. 2005.
- [123] I. V. Bajić, "Non-causal error control for video streaming over wireless packet networks," *Proc. IEEE WirelessCom'05*, pp. 1106-1111, Maui, HI, Jun. 2005.
- [124] I. V. Bajić, "Detection-theoretic analysis of MatInspector," *Proc. IEEE Workshop on Genomic Signal Processing and Statistics (GENSIPS'05)*, New Port, RI, May 2005.
- [125] I. V. Bajić, "Adaptive MAP error concealment for dispersively packetized images," *Proc. IEEE Int. Symposium on Multimedia Software Engineering (MSE'04)*, pp. 52-59, Miami, FL, Dec. 2004.
- [126] Q. Qu, I. V. Bajić, X. Tian, and J. W. Modestino, "On the effects of path correlation in multi-path video communications over packet networks," *Proc. IEEE Globecom'04*, vol. 2, pp. 977-981, Dallas, TX, Dec. 2004.
- [127] Y. Shan, I. V. Bajić, S. Kalyanaraman, and J. W. Woods, "Overlay multi-hop FEC scheme for video streaming over peer-to-peer networks," *Proc. IEEE ICIP'04*, vol. 5, pp. 3133-3136, Singapore, Oct. 2004.
- [128] I. V. Bajić, "Optimal subsampling of circularly bandlimited images," *Proc. IEEE ICASSP'04*, vol. 3, pp. 313-316, Montreal, Canada, May 2004.
- [129] I. V. Bajić, O. Tickoo, A. Balan, S. Kalyanaraman, and J. W. Woods, "Integrated end-to-end buffer management and congestion control for scalable video communications," *Proc. IEEE ICIP'03*, vol. III, pp. 257-260, Barcelona, Spain, Sep. 2003. **(IBM Research Student Travel Grant)**
- [130] I. V. Bajić and J. W. Woods, "EZBC video streaming with channel coding and error concealment," *Proc. SPIE*, vol. 5150, (*Visual Commun. Image Proc. – VCIP 2003*), pp. 512 – 522, Lugano, Switzerland, Jul. 2003.
- [131] I. V. Bajić and J. W. Woods, "Concatenated multiple description coding of frame-rate scalable video," *Proc. IEEE ICIP'02*, vol. II, pp. 193-196, Rochester, NY, Sep. 2002.
- [132] I. V. Bajić and J. W. Woods, "Domain-based multiple description coding of images and video," *Proc. SPIE*, vol. 4671 (*Visual Commun. Image Proc. – VCIP 2002*), pp. 124-135, San Jose, CA, Jan. 2002.
- [133] I. V. Bajić, J. W. Woods, and A. M. Chaudry, "Robust transmission of packet video through dispersive packetization and error concealment," in *Proc. Packet Video Workshop (PV2000)*, Cagliari, Sardinia, Italy, May 2000.
- [134] V. B. Bajić, I. V. Bajić, and W. Hide, "Recognition of complex spectral patterns of a class of human promoters by ANNs," *Proc. VI International SAUM Conference (SAUM'98)*, pp. 489-492, Nis, Yugoslavia, Sep. 1998.
- [135] V. B. Bajić and I. V. Bajić, "Improved accuracy of EM flow measurements in partially filled pipes based on Radial Basis ANN," *Proc. VI International SAUM Conference (SAUM'98)*, pp. 494-498, Nis, Yugoslavia, Sep. 1998.
- [136] V. B. Bajić, I. V. Bajić, and W. Hide, "Application of the Resonant Recognition Model to a set of human promoters: A word of warning," *Adv. Systems, Signals, Control and Computers (SSCC'98)*, Vol. II, pp. 312-315, Durban, South Africa, Sep. 1998.
- [137] V. B. Bajić, I. V. Bajić, and W. Hide, "Spectral characterization of human promoters," *Advances in Systems, Signals, Control and Computers (SSCC'98)*, Vol. II, pp. 321-325, Durban, South Africa, Sep. 1998.
- [138] I. V. Bajić and V. B. Bajić, "RB neural networks in the EM measurements of flow through partially filled pipes," *Adv. Systems, Signals, Control and Computers (SSCC'98)*, Vol. II, pp. 293-298, Durban, South Africa, Sep. 1998.
- [139] V. B. Bajić and I. V. Bajić, "Some problems in application of Information Spectrum Method and Resonant Recognition Model for cross-spectral analysis of DNA/RNA sequences," *Proc. IEEE South African Symposium on Communications and Signal Processing (COMSIG '98)*, pp. 219-224, Cape Town, South Africa, Sep. 1998.
- [140] V. B. Bajić, I. V. Bajić, and W. Hide, "A new method of spectral analysis of DNA/RNA and protein sequences," (plenary lecture), *Proc. First International Conference on Bioinformatics of Genome Regulation and Structure (BGRS'98)*, Vol. 1, pp. 120-123, Novosibirsk, Russia, Aug. 1998.

Conference demonstrations:

- [1] M. Ulhaq and I. V. Bajić, "ColliFlow: A library for executing collaborative intelligence graphs," presented at *NeurIPS'20*, Vancouver, BC, Dec. 2020.
- [2] M. Ulhaq and I. V. Bajić, "Shared mobile-cloud inference for collaborative intelligence," presented at *NeurIPS'19*, Vancouver, BC, Dec. 2019.
- [3] H. Unnibhavi, H. Choi, S. R. Alvar, and I. V. Bajić, "DFTS: Deep feature transmission simulator," presented at *IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [4] A. Harell, S. Makonin, and I. V. Bajić, "A recurrent neural network for multisensory non-intrusive load monitoring on a Raspberry Pi," presented at *IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [5] L. Bragilevsky and I. V. Bajić, "De-sketching," presented at *IEEE MMSP'18*, Vancouver, BC, Aug. 2018.
- [6] H. Hadizadeh and I. V. Bajić, "NAL-SIM: An interactive simulator for H.264/AVC video coding and transmission," presented at *IEEE CCNC'10*, Las Vegas, NV, Jan. 2010.

Tutorials:

- [1] I. V. Bajić, "Multi-task image and video compression," *IEEE ICIP*, Bordeaux, France, Sep. 2022.
- [2] I. V. Bajić, "Edge-cloud collaborative multimedia analysis," *IEEE ICME*, Taipei, Taiwan, Jun. 2022.
- [3] I. V. Bajić, "Collaborative intelligence for the Internet of Things," *IEEE CCECE*, Sep. 2021. (Invited)

Short magazine/newsletter papers:

- [1] I. V. Bajić and X. Ma, "Scalable video coding for telepresence in the performing arts," *IEEE ComSoc MMTC E-Letter*, vol. 4, no. 8, pp. 28-30, Sep. 2009. (Invited)

Editorials:

- [1] I. V. Bajić, G. Cheung, P. Frossard, J. Ostermann, and W.-t. Tan, "Interactive 3D video streaming [Guest Editorial]," *IEEE Communications Magazine*, vol. 51, no. 5, pp. 92-93, May 2013.
- [2] G.-M. Su, I. V. Bajić, H. H. Chen, and H. Sun, "Guest editorial," *Journal of Communications*, Special Issue on Multimedia Communications, vol. 4, no. 9, pp. 597-599, Oct. 2009.

Books and book chapters:

- [1] I. V. Bajić, "Video streaming," in *AccessScience*, McGraw-Hill Education, 2016.
- [2] I. V. Bajić, *Robust Subband/Wavelet Coding and Transmission of Images and Video*, VDM Publishing, 2008. ISBN 978-3-639-10440-0
- [3] I. V. Bajić, "Error control for broadcasting and multicasting: An overview," Chapter 11 in *Mobile Multimedia Broadcasting Standards* (F.-L. Luo, Ed.), Springer, 2008. ISBN 978-0-387-78262-1
- [4] I. V. Bajić, "Robust SWT video coding," Section 12.2 in *Multidimensional Signal, Image and Video Processing and Coding* (J. W. Woods), pp. 447-457, Elsevier - Academic Press, 2006. ISBN 0-12-088516-6. Section 13.2 in the Second Edition, 2011, ISBN 978-0123814203
- [5] V. B. Bajić and I. V. Bajić, "How neural networks find promoters using recognition of micro-structural promoter components," Chapter 5 in *The Practical Bioinformatician*, (L. Wong, Ed.), pp. 91-122, World Scientific, 2004. ISBN 9-812-38846-X
- [6] V. B. Bajić and I. V. Bajić, "Neural network system for promoter recognition," Chapter 14 in *Future Directions for Intelligent Systems and Information Sciences: The Future of Speech and Image Technologies, Brain Computers, WWW, and Bioinformatics*, (N. Kasabov, Ed.), pp. 288-305, Physica-Verlag, 2000. ISBN 3-790-81276-5

Standardization contributions:

- [1] M. Testolina, S. R. Alvar, I. V. Bajić, and T. Ebrahimi, "Proposed updates on the JPEG AI common training and test conditions document," ISO/IEC JTC 1/SC 29/WG 1 M94043, Jan. 2022.
- [2] H. Choi, M. Ulhaq, S. R. Alvar, and I. V. Bajić, "Latent space scalability for compressed domain denoising," ISO/IEC JTC 1/SC 29/WG 1 M93047, Oct. 2021.
- [3] H. Choi, E. Hosseini, S. R. Alvar, R. A. Cohen, I. V. Bajić, A. Karabutov, Z. Yin, and E. Alshina, "[VCM] Object labelled dataset on raw video sequences," ISO/IEC JTC1/SC29/WG11 MPEG2020/m54737, Jul. 2020. (**Used in VCM exploration studies as SFU-HW-Objects-v1 dataset**)

- [4] W. Lim, H. Jo, J. Yoo, D. Sim and I. V. Bajić, "JCT3V – Inter-view MAD prediction for rate control of 3D multi-view video coding," JCT3V of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, JCT3V-E0227, Vienna, Austria, Jul.-Aug. 2013. **(Adopted in HTM 8.1)**
- [5] W. Lim, H. Jo, D. Sim and I. V. Bajić, "The rate control schemes for 3D multi-view video coding," JCT3V of ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, JCT3V-D0111, Incheon, KR, Apr. 2013.
- [6] W. Lim, D. Sim, and I. V. Bajić, "JCT3V – Improvement of the rate control for 3D multi-view video coding," ITU-T SG 16 WP 3 and ISO/IEC JTC1/SC29/WG11, document JCT3V-C0090/M27831, Geneva, Switzerland, Jan. 2013.
- [7] W. Lim, J. Yoo, H. Choi, J. Nam, H. Jo, D. Sim, and I. V. Bajić, "3D-HEVC – Improvement of the rate control for 3D multi-view video coding," ISO/IEC JTC1/SC29/WG11 MPEG2012/M26638, Shanghai, China, Oct. 2012.
- [8] W. Lim, H. Choi, J. Nam, H. Jo, D. Sim, and I. V. Bajić, "3D-HEVC – Rate control for 3D multi-view video coding," ISO/IEC JTC1/SC29/WG11 MPEG2012/M25966, Stockholm, Sweden, Jul. 2012.
- [9] H. Choi, J. Nam, J. Yoo, D. Sim, and I. V. Bajić, "Improvement of the rate control based on pixel-based URQ model for HEVC," ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, JCTVC-I0094/ m24333, Geneva, Switzerland, Apr.-May 2012.
- [10] H. Choi, J. Nam, J. Yoo, D. Sim, and I. V. Bajić, "Rate control based on unified RQ model for HEVC," ITU-T SG16 WP3 and ISO/IEC JTC1/SC29/WG11, JCTVC-H0213/m23088, San José, CA, Feb. 2012. **(Adopted in HM 6.2)**
- [11] A. Golwelkar, I. V. Bajić, and J. W. Woods, "Response to call for evidence on scalable video coding," ISO/IEC JTC1/SC29/WG11/M9723, Trondheim, Norway, Jul. 2003.

Patents:

- [1] A. A. Karabutov, S. R. Alvar, I. V. Bajić, H. Choi, R. A. Cohen, S. Ikonin, T. M. Solovyev, and E. Alshina, "Bit allocation for network feature channel compression," PCT/RU2021/000096, Mar. 2021.
- [2] A. A. Karabutov, H. Choi, I. V. Bajić, R. A. Cohen, S. R. Alvar, S. Ikonin, E. Alshina, Y. Zhao, "Scalable coding of video and associated features," PCT/RU2021/000013, Jan. 2021.
- [3] C. Tumpach, R. Jones, S. Makonin, I. V. Bajić, and Md. Z. A. Bhotto, "Dynamic energy management and cost optimization in local grids," U.S. patent application 17/494,676, Oct. 2021.
- [4] A. A. Karabutov, R. A. Cohen, H. Choi, S. R. Alvar, I. V. Bajić, E. A. Alshina, S. Y. Ikonin, and M. B. Sychev, "Quantization for neural networks," PCT/RU2021/050105, Apr. 2021.
- [5] B. R. Vojčić, I. V. Bajić, and J. Haghghat, "Joint source-channel decoding with source sequence augmentation," U.S. Patent 8,948,272, filed Dec. 2012, granted Feb. 2015.
- [6] M. Fatourehchi, H. Hadizadeh, E. Santos-Netu, M. Ripeanu, and I. V. Bajić, "Intelligent supplemental search engine optimization," U.S. Patent Application PCT/CA2013/000772, filed Sep. 2013.
- [7] S. Daly, H. Hadizadeh, I. V. Bajić, and P. Saeedi, "Systems and methods for ISO-perceptible power reduction for displays," U.S. Patent 9,728,159 B2, filed Mar. 2013, granted Aug. 2017.

Technical Reports:

- [1] H. Hadizadeh, I. V. Bajić, and G. Cheung, "Complexity of saliency-cognizant error concealment based on the Itti-Koch-Niebur saliency model," MCL Technical Report, MCL-2012-11-01, Nov. 2012.

Media coverage:

- [1] "Targeting video voyeurs with AI," Special Report, *IEEE Signal Processing Magazine*, May 2020.
- [2] "Shutting down online surveillance," Airplay with Dave White, CBC Radio, July 2019.
- [3] "Novel system compresses motion-capture data," *APEGBC Innovation Magazine* (Project highlights), vol. 21, no. 3, p. 31, May/June 2017.
- [4] "Software guides viewers' attention within images," *APEGBC Innovation Magazine* (Project highlights), vol. 20, no. 4, p. 33, Jul./Aug. 2016.
- [5] "Green images," *APEGBC Innovation Magazine* (Project highlights), vol. 18, no. 4, p. 22, Jul./Aug. 2014.