EAKTA JAIN

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Phone: 352-294-6653 Email: ejain@ufl.edu
Website: jainlab.cise.ufl.edu

INTERESTS Visual Perception, Eye Tracking, Modeling Humans, Virtual Reality

EDUCATION

Ph.D. (Robotics) 2006 – 2012
Carnegie Mellon University, Pittsburgh PA
Thesis: Attention-guided Algorithms to Retarget and Augment Animations, Stills, and Videos

M.S. (Robotics) 2006-2010
Carnegie Mellon University, Pittsburgh PA

B.Tech. (Electrical Engineering) 2002-2006
Indian Institute of Technology Kanpur, India

EXPERIENCE

Associate Professor (2021-present)
Department of Computer & Information Science & Engineering, University of Florida

Assistant Professor (2014-2021)
Department of Computer & Information Science & Engineering, University of Florida

Member Technical Staff (2012-2014)
Texas Instruments Embedded Signal Processing Lab, Dallas TX

Systems Software Engineer (2012)
Texas Instruments, Dallas TX

Graduate Research Assistant (2006-2012)
Robotics Institute, Carnegie Mellon University, Pittsburgh PA

Lab Associate (2012, 2010, 2008)
Disney Research Pittsburgh, Pittsburgh PA

Graduate Intern (2007)
Walt Disney Animation Studios, Burbank CA

AWARDS AND FUNDING

[F.11] National Science Foundation (PI, 2021-2022)
"FWHTF-P: Advancing the future work of nuclear operators through virtual reality-based training REU Supplement"
Total: $16000, PI share: $8000

[F.10] Google (PI, Faculty adviser, 2020-2021)
"2020-2021 Google Fellowship in Human Computer Interaction - Brendan David-John"
Total: $33630. PI share: $33630

[F.9] USDOT Inclusive Design Challenge Stage 1 Prize (Co-PI, 2021-2022)
"Optimizing Highly Automated Driving Systems for People with Cognitive Disabilities"
Total: $300000, Co-PI share: $51271

[F.8] National Institute of Mental Health (NIMH) R21 (PI, 2020-2022)
"Protecting the privacy of the child through facial identity removal in recorded behavioral observation sessions"
Total: $416496, PI share: $218697

[F.7] National Science Foundation (PI, 2020-2021)
"FWHTF-P: Advancing the future work of nuclear operators through virtual reality-based training"
Total: $149999, PI share: $120667

[F.6] University of Florida Informatics Institute Seed Fund (Co-PI, 2020)
"Adapting In-Store Theft Prevention Technology to Detect Malicious Coughing and Product Tampering"
Total: $10844, Co-PI share: $3600

[F.5] University of Florida Informatics Institute Seed Fund (Co-PI, 2020-2021)
"Assessing Political Representation using Neural Networks"
Total: $29455, Co-PI share: $2000

[F.4] Florida Department of Transportation (PI, 2018-2020)
"I-STREET Initiative: Evaluation of Intelligent School Zone Beacon and Vehicle-Cyclist Detection and Warning System"
Total: $226808, PI share: approx $120000

[F.3] National Science Foundation CRII: RI 1566481 (PI, 2016-2018)
"CRII: RI: Learning to Predict the Temporal Interestingness of Videos"
Total: $182634, PI share: $182634

[F.2] YouTube Faculty Research Award (PI, 2016-2021)
Total: $100000, PI share: $100000

[F.1] Facebook Oculus Research Gift (PI, 2016-2018)

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Total: $25000, PI share: $25000

[AW.3] Honorable Mention Best Paper, ACM Symposium on Applied Perception (2012)

[AW.2] Best Paper Award, ACM Symposium on Computer Animation (2010)

[AW.1] Finalist, Google Anita Borg Memorial Scholarship (2008)

PUBLICATIONS *(JOURNALS)*

[J.12] Is the Avatar Scared? Pupil as a Perceptual Cue, Dong, Y., Joerg, S., **Jain, E.** Computer Animation and Virtual Worlds. (in press)

[J.11] Online Hazard Recognition Training: A Comparative Case Study of Static Images, Cinemagraphs, and Videos, Eiris, R., **Jain, E.**, Gheisari, M., Wehle, A. (2021) *ASCE Journal of Construction Engineering and Management, vol 147, issue 8*.

[J.10] A privacy-preserving approach to streaming eye-tracking data, David-John, B., Hosfelt, D., Butler, K., **Jain, E.** (2021) *IEEE Transactions on Visualization and Computer Graphics (TVCG) Special Issue on IEEE VR*. Best Paper Nominee

[J.9] The Security-Utility Trade-off for Iris Authentication and Eye Animation for Social Virtual Avatars, John, B., Koppal, S., Joerg, S., **Jain, E.** (2020) *IEEE Transactions on Visualization and Computer Graphics (TVCG) Special Issue on IEEE VR*. (p1-p11)

[J.8] A Benchmark of Four Methods for Generating 360° Saliency Maps from Eye Tracking Data, John, B. and Le Meur, O. and **Jain, E.** (2019) International Journal of Semantic Computing 13.03 (2019)

[J.7] Using Audience Physiology to Assess Engaging Conservation Messages and Animal Taxa, **Jain, E.**, Jacobson, S., Raiturkar, P., Morales, N., Nagarajan, A., Chen, B., Sivasubramanian, N., Chaturvedi, K., and Lee, A., *Society & Natural Resources* (2019).

[J.6] Love or Loss: Effective message framing to promote environmental conservation, Jacobson, S., Morales, N., Chen, B., Soodeen, R., Moulton, M. and **Jain, E.** (2018). *Applied Environmental Education & Communication*.

[J.5] Creating Segments and Effects on Comics by Clustering Gaze Data, Thirunarayanan, I. Khetarpal, K., Koppal, S., Le Meur, O., Shea, J., **Jain, E.** (2017). *ACM Transactions on Multimedia Computing Communications and Applications (TOMM)*, 13(3), Article 24.

[J.4] Is the Motion of a Child Perceivably Different from the Motion of an Adult? **Jain, E.**, Anthony, L., Aloba, A., Castonguay, A., Cuba, I., Shaw, A. and Woodward, J. (2016). *ACM Transactions on Applied Perception (TAP)*, 13(4), Article 22.

[J.3] Predicting Moves-on-Stills for Comic Art Using Viewer Gaze Data, **Jain**, E. Sheikh, Y., Hodgins, J. (2016). *IEEE Computer Graphics and Applications (CG&A)*, 36(4), p34-p45.

[J.2] Gaze-driven Video Re-editing, **Jain, E.**, Sheikh, Y., Shamir, A. and Hodgins, J., (2015), *ACM Transactions on Graphics (TOG)* (34, p21:1-p21:12).

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[J.1] Three-dimensional Proxies for Hand-drawn Characters, **Jain, E.**, Sheikh, Y., Mahler, M., and Hodgins, J. (2012), *ACM Transactions on Graphics (TOG)* (31, p8:1-p8:16).

PUBLICATIONS *(PEER REVIEWED CONFERENCES AND SYMPOSIA)*

[C.19] Adult2child: Motion Style Transfer using CycleGANs, Dong, Y., Aristidou, A., Shamir, A., **Jain, E.** (2020) *ACM SIGGRAPH Conference on Motion, Interactions and Games (MIG).*

[C.18] FoveaCam: A MEMS Mirror-Enabled Foveating Camera, Tilmon, B., **Jain, E.,** Ferrari, S., Koppal, S. (2020) *IEEE International Conference on Computational Photography (ICCP).*

[C.17] Hazard-Recognition Training Using Omnidirectional Cinemagraphs: Comparison Between Virtual Reality and Lecture-based Techniques, Eiris, R., John, B., Gheisari, M., **Jain, E.**, Wehle, A. Memarian, B. (2020) In *Proceedings of the ASCE Construction Research Congress (CRC)*.

[C.16] Eye Tracking and Virtual Reality, McNamara, A. and **Jain, E.** (2019) *SIGGRAPH Asia 2019 Courses.*

[C.15] Differential Privacy for EyeTracking Data, Liu, A., Xia, L., Duchowski, A., Bailey, R., Holmqvist, K. and **Jain, E.** (2019) *Proceedings of ACM Symposium on Eye Tracking Research & Applications (ETRA).*

[C.14] EyeVEIL: Degrading Iris Authentication in Eye Tracking Headsets, John, B., Koppal, S. and **Jain, E.** (2019) *Proceedings of ACM Symposium on Eye Tracking Research & Applications (ETRA).*

[C.13] Quantifying Differences between Child and Adult Motion based on Gait Features, Aloba, A., Luc, A., Woodward, J., Dong, Y., Zhang, R., **Jain, E.**, and Anthony, L. (2019) *21st International Conference on Human-Computer Interaction. Invited paper.*

[C.12] An Evaluation of Pupillary Light Reflex Models for 2D Screens and VR HMDs, John, B., Raiturkar, P., Banerjee, A., **Jain, E.** (2018) *ACM Symposium on Virtual Reality Systems and Technology (VRST)*.

[C.11] A Preliminary Benchmark of Four Methods to Generate 360 Saliency Maps, John, B., Raiturkar, P., Le Meur, O., **Jain, E.** (2018) *First International Conference on Artificial Intelligence and Virtual Reality (AIVR).*

[C.10] DeepComics: Saliency estimation for comics, Bannier, K., **Jain, E.** and Le Meur, O. (2018). *ACM Symposium on Eye Tracking Research & Applications (ETRA).*

[C.9] How many words is a picture worth? Attention allocation on thumbnails versus title text regions, Yandandul, C., Paryani, S., Le, M. and **Jain, E.** (2018) *ACM Symposium on Eye Tracking Research & Applications (ETRA)*.

[C.8] Kinder-Gator: The UF Kinect Database of Child and Adult Motion, Aloba, A., Flores, G., Woodward, J., Shaw, A., Castonguay, A., Cuba, I., Dong, Y., **Jain, E.** and Anthony, L. *Eurographics 2018 Short Papers*.

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[C.7] Adult2Child: Dynamic Scaling Laws to Create Child-like Motion, Dong, Y., Paryani, S., Rana, N., Aloba, A., Anthony, L., **Jain, E.** (2017) *ACM International Conference on Motion in Games (MIG), p13:1-p13:10.*

[C.6] Decoupling Light Reflex from Pupillary Dilation to Measure Emotional Arousal in Videos, Raiturkar, P., Kleinsmith, A., Keil, A., Banerjee, A., and **Jain, E.** (2016) *ACM Symposium on Applied Perception (SAP)*, p89-p96.

[C.5] Predicting Primary Gaze Behavior Using Social Saliency Fields, Park, H. S., **Jain, E.** and Sheikh, Y. (2013) *International Conference on Computer Vision (ICCV)* (p3503-3510).

[C.4] 3D Social Saliency from Head-mounted Cameras, Park, H. S., **Jain, E.** and Sheikh, Y. (2012) *Advances in Neural Information Processing Systems (NIPS)* (p431-p439).

[C.3] Inferring Artistic Intention in Comic Art through Viewer Gaze, **Jain, E.**, Sheikh, Y. and Hodgins, J. (2012) *ACM Symposium on Applied Perception (SAP)* (p55-p62), Best Paper Honorable Mention

[C.2] Augmenting Hand Animation with Three-dimensional Secondary Motion, **Jain, E.**, Sheikh, Y., Mahler, M. and Hodgins, J. (2010) *ACM Symposium on Computer Animation (SCA)* (p93-p102), Best Paper Award

[C.1] Leveraging the Talent of Hand Animators to Create Three-Dimensional Animation, **Jain, E.,** Sheikh, Y. and Hodgins. J. (2009) *ACM Symposium on Computer Animation (SCA)* (p93-p102).

PUBLICATIONS (WORKSHOPS)

[W.9] Priorities and Considerations in Advancing the Training of Nuclear Reactor Operators through Mixed Reality, **Jain, E.** and Enqvist, A. (2021) Winter Meeting of the American Nuclear Society.

[W.8] Who do you look like? Gaze-based authentication for workers in VR, LaRubbio, K., Wright, J., David-John, B., Enqvist, A., **Jain, E.** (2022) *IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW). In press.*

[W.7] Let's SOUP up XR: Collected thoughts from an IEEE VR workshop on privacy in mixed reality, David-John, B., Hosfelt, D., Butler, K., **Jain, E.** (2021) *VR4Sec: 1st International Workshop on Security for XR and XR for Security, co-located with USENIX/SOUPS 2021. p1-p3.*

[W.6] Let It Snow: Adding pixel noise to protect the user's identity, John, B., Liu, A., Xia, L., Koppal, S., **Jain, E.** (2020) *ACM Symposium on Eye Tracking Research and Applications (ETRA) Adjunct Proceedings: Workshop on Privacy and Ethics in Eye Tracking (PrEThics). p1-p3.*

[W.5] Look Out! A Design Framework for Safety Training Systems and A Case Study on Omnidirectional Cinemagraphs, John, B., Kalyanaraman, S., **Jain, E.** (2020) *IEEE VR Workshops "TrainingXR"*. p1-p7.

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[W.4] 3D Saliency from Eye Tracking with Tomography, Ma, B., **Jain, E.**, Entezari, A., *Workshop on Eye Tracking and Visualization (ETVIS) co-located with IEEE VIS. (Archived as a Springer book chapter in Eye Tracking and Visualization: Foundations, Techniques, and Applications in 2017.)*

[W.3] A Preliminary Benchmark of Four Saliency Algorithms on Comic Art, Khetarpal, K., **Jain, E.,** (2016) *IEEE International Conference on Multimedia and Expo Workshop on Multimedia Artworks and Analysis (MMArt).* p1-p6.

[W.2] The Role of Undergraduate Research in an Undergraduate Engineering Curriculum, Donnelly, A., **Jain, E.**, Lopatto, D., Spooner, H., Ramjatan, S., Chun, G., (2016) *ATINER's Conference Paper Series ENGEDU2016-1957*

[W.1] ERELT: a faster alternative to the list-based interfaces for tree exploration and searching in mobile devices, Chhetri, A.P., **Jain, E.**, Zhang, K. (2013) *Proceedings of the 6th International Symposium on Visual Information Communication and Interaction (VINCI).*

PUBLICATIONS (REFEREED ABSTRACTS)

[A.5] The Uncanniness of Face Swaps, Wilson, E., Persaud, A., Esposito, N., Joerg, S., Shic, F., Patra, R., Skytta, J., **Jain, E.** (in press) Journal of Vision (Vision Science Society (VSS 2022) Abstract)

[A.4] Style Translation to Create Child-like Motion, Dong, Y., Aloba, A., Anthony, L., and **Jain, E.** (2018) *Eurographics Posters.*

[A.3] Measuring viewers' heart rate response to environment conservation videos. Raiturkar P, Jacobson, S., Chen, B., Chaturvedi, K., Cuba, I., Lee, A., Franklin, M., Tolentino, J., Haynes, N., Soodeen, R., **Jain, E.** (2016) *ACM Symposium on Applied Perception (SAP)* (pp. 138-138). Selected as one of the posters to be presented along with SIGGRAPH ACM Student Research Posters.

[A.2] Scan path and movie trailers for implicit annotation of videos. Raiturkar, P., Lee, A., **Jain, E.** (2016) *ACM Symposium on Applied Perception (SAP)* (pp. 141-141).

[A.1] Leveraging gaze data for segmentation and effects on comics. Thirunarayanan, I., Koppal, S., Shea, J., **Jain, E.** (2016) *ACM Symposium on Applied Perception (SAP)* (pp. 137-137). Selected as one of the posters to be presented along with SIGGRAPH ACM Student Research Posters.

TECHNICAL REPORTS

[T.4] Annotation System for Aiding Automatic Face Detectors, Wilson, E., Skytta, J., Shic, F., **Jain, E.** (2021) *University of Florida Technical Report IR00011535*.

[T.3] Benchmarking Face Detectors, Wilson, E., Skytta, J., Shic, F., **Jain, E.** (2021) *University of Florida Technical Report IR00011536*.

[T.2] Omnidirectional Cinemagraphs for Safety Training, John, B., Taylor, C.J., Kalyanaraman, S., **Jain, E.** (2019) *University of Florida Technical Report IR00010924.*

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[T.2] Identifying Computer-Generated Faces: An Eye Tracking Study, Raiturkar, P., Farid, H., **Jain, E.** (2018) *University of Florida Technical Report IR00010525.*

[T.1] Who Watches the Watchmen: Eye tracking in XR, **Jain, E.** (2018) *Dagstuhl Seminar Position Paper.*

TEACHING

CAP 4621 Artificial Intelligence (Fall 2020, Fall 2019, Fall 2018, Fall 2017)

CAP 5108 Research Methods for Human-centered Computing (Spring 2019, Spring 2018, 2017, 2016, 2015)

CIS 6930/4930 Human Centered Computer Graphics (Fall 2014, Fall 2015)

SELECTED ACADEMIC SERVICE

National Science Foundation, Panelist (2021, 2020, 2018, 2016), Adhoc (2020, 2017)

[ACM ETRA] Technical Papers Chair (2020), Posters Chair (2019), Area Chair (2019)

[ACM SIGGRAPH Asia] International Program Committee (2019)

[ACM SIGGRAPH] International Program Committee (2021, 2018, 2017)

[Eurographics] Posters Co-Chair (2018), International Program Committee (2018)

[ACM Symposium on Applied Perception (SAP)] Technical Program Chair (2021) Conference Chair (2016), Steering Committee (2017, 2022), Program Committee (2020, 2019, 2018, 2015)

Review Editor: Frontiers in Virtual Reality (2020-21)

Reviewer: ACM TOG, ACM TAP, ACM CSUR, ACM SIGCHI, IEEE Trans. on Multimedia

Search Committee Member for ACM TAP Editor-in-Chief (2020-21)

Invited Panelist, WiGraph Berthouzoz Women in Graphics Lunch, SIGGRAPH 2021

PHD COMMITTEE CHAIR

Yuzhu Dong (Human-Centered Computing, 2020, Gartner Group Graduate Fellow) [now Research Engineer at Google Deep Mind]

Brendan John (Computer Science, expected graduation 2022, NSF Graduate Research Fellow, Google PhD Research Fellow, L3Harris Graduate Fellow)

Ethan Wilson (Computer Science, expected graduation 2025, University of Florida Graduate School Pre-eminence Awardee, 2020-21 Generation Next Scholar)

PATENTS

EYE TRACKING APPARATUSES CONFIGURED FOR DEGRADING IRIS AUTHENTICATION, Inventors: Eakta Jain, Sanjeev Jagannatha Koppal, Brendan Matthew John U.S. Patent No. 11,079,843, August 3, 2021.

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