

Rupal Agarwal

Email: rupalagarwal@usf.edu | Personal Website:
[LinkedIn](#) | [Google Scholar](#) | [Research Gate](#) | ORCID: 0000-0002-3764-1931

EDUCATION

Doctor of Philosophy (Ph.D.) University of South Florida Major: Computer Science Advisor: Shaun Canavan, Ph.D.	August 2020 - May 2026 (expected) Tampa, Florida
Master of Science (M.S.) University of South Florida Major: Computer Science Master's Thesis: Classifying Emotions with EEG and Peripheral Physiological Data Using 1D Convolutional Long Short-Term Memory Neural Network Advisor: Marvin Andujar, Ph.D.	August 2018 - May 2020 Tampa, Florida
Bachelor of Science (B.S.) Manipal University Jaipur Major: Computer Science and Engineering	August 2014 - May 2018 Jaipur, India

RESEARCH INTERESTS

Artificial Intelligence (AI), Affective Computing (AC), Brain-Computer Interfaces (BCI), and Human-Computer Interaction (HCI)

WORK EXPERIENCE

Graduate Research Associate Computer Vision and Pattern Recognition Group, University of South Florida	August 2024 - Present Tampa, Florida
Graduate Research Assistant Neuro-Machine Interaction Lab, University of South Florida	January 2019 – July 2024 Tampa, Florida
Graduate Teaching Associate Bellini College of Artificial Intelligence, Cybersecurity and Computing, University of South Florida	December 2019 – Present Tampa, Florida
Software Developer Intern Knimbus Online Private Ltd.	February 2018 – June 2018 Gurgaon, India

PUBLICATIONS

Journals

- [J.2] **Agarwal, R., & Andujar, M.** (2025). Engage Neuro Art: Improving College Students' Sustained Engagement through Painting with Brain Activity. *IEEE Transactions on Human-Machine Systems*. (Under Review, 2025).
- [J.1] **Agarwal, R., Andujar, M., & Canavan, S.** (2022). Classification of emotions using EEG activity associated with different areas of the brain. *Pattern Recognition Letters*, 162, 71–80. **(Impact Factor: 5.1)**.

Conference Papers

- [C.5] **Agarwal, R.**, Hinduja, S., & Canavan, S. (2025). EnsembleIQ-Pain: Intelligent Cluster Calibration for Personalized Pain Detection. In *International Conference on Multimodal Interaction (ICMI)*. ACM. (Under Review, 2025).
- [C.4] **Agarwal, R.**, Agazzi, H., & Canavan, S. (2025). Context-Based Screening of Autism Risk in Children. In *International Conference on Automatic Face and Gesture Recognition (FG)*. IEEE.
- [C.3] Lewis, T., **Agarwal, R.**, & Andujar, M. (2023, October). Distance Metric-Based Classification Comparisons for a Brain-Computer Interface Authentication. In *2023 IEEE International Conference on Systems, Man, and Cybernetics (SMC)* (pp. 4714-4719). IEEE.
- [C.2] Lewis, T., **Agarwal, R.**, & Andujar, M. (2022, August). An Ethical Discussion on BCI-Based Authentication. In *International Conference on Pattern Recognition* (pp. 166-178). Cham: Springer Nature Switzerland.
- [C.1] **Agarwal, R.**, & Andujar, M. (2022, June). Neuro-Voting: An Accuracy Evaluation of a P300-Based Brain-Computer Interface for Casting Votes. In *International Conference on Human-Computer Interaction* (pp. 409-419). Cham: Springer International Publishing.

Master's Thesis

- [MT.1] **Agarwal, R.** (2020). Classifying Emotions with EEG and Peripheral Physiological Data Using 1D Convolutional Long Short-Term Memory Neural Network. *MS Thesis. Completed towards master's degree at University of South Florida.*

PATENTS

- [P.1] **R. Agarwal**, & M. Andujar (2024, December). System of and method for predicting and/or casting a vote via brain activity. US Patent No. 12,175,801.

GRANT WRITING EXPERIENCE

Federal Grant

- [F.1] Improving Attention Retention of Undergraduate/Freshmen Students with ADHD using Passive Brain Painting in an Immersive Environment, National Science Foundation, EHR Core Research, \$500, 000, 2022.

White Paper

- [WP.1] Retaining Attention with Brain Painting, United States Special Operations Command (USSOCOM), \$485, 500, 2023.

PRESENTATIONS

- [P.12] **Oral Presentation** – “Multimodal Early Autism Spectrum Disorder Classification in Children using Contextual Information”, **Doctoral Consortium**, International Conference on Automatic Face and Gesture Recognition, Clearwater, FL, **May 2025**
- [P.11] **Poster Presentation** – “Contextual Information Enhances Early Autism Screening with Multimodal Data in Children”, **Doctoral Consortium**, International Conference on Automatic Face and Gesture Recognition, Clearwater, FL, **May 2025**
- [P.10] **Paper (Oral) Presentation** – “Context-Based Screening of Autism Risk in Children”, International Conference on Automatic Face and Gesture Recognition, Clearwater, FL, **May 2025**
- [P.9] **Oral Presentation** – “Context-Based Classification of Autism: Current Methods, Limitations, and Future Directions, AI + X Seminar, University of South Florida, Tampa, FL, **March 2025**
- [P.8] **Oral Presentation** - “Brain-Controlled Drones”, Kadoka Academy, St. Petersburg, FL, **November 2023**

- [P.7] **Oral Presentation** - “Brain-Controlled Drones”, Cybersecurity Bootcamp, University of South Florida, Tampa, FL, **July 2023**
- [P.6] **Oral Presentation** - “Introduction to Brain-Computer Interfaces and Emotiv”, Neuro-Machine Interaction Lab Tour, University of South Florida, Tampa, FL, **March 2023**
- [P.5] **Oral Presentation** – “Introduction to Brain-Computer Interfaces and Emotiv”, SHPE Hackabull Workshop, University of South Florida, Tampa, FL, **March 2023**
- [P.4] **Oral Presentation** – “Attention Retention Using Brain Painting”, Human-Computer Interaction Course, University of South Florida, Tampa, FL, **November 2022**
- [P.3] **Oral Presentation** – “Attention Retention Using Brain Painting”, AI + X seminar, University of South Florida, Tampa, FL, **October 2022**
- [P.2] **Paper (Oral) Presentation** – “Neuro-Voting: An Accuracy Evaluation of a P300-Based Brain-Computer Interface for Casting Votes”, International Conference on Human-Computer Interaction, Virtual, **June 2022**
- [P.1] **Poster Presentation** - “Exploring the Use of Brain-Painting to Increase Attention Retention in College Students”, USF Health Research Day Competition, University of South Florida, Tampa, FL, **February 2022**

AWARDS

TechConnect Defense Innovation Award - “An Artistic Neurotechnology to Improve Mental Health”	November 2022
Scholarship, ACM Tapia Conference	September 2022
Scholarship, Grace Hopper Conference	September 2021

LEADERSHIP EXPERIENCE

Simulation Project Mentor	January 2023
Neuro-Machine Interaction Lab, University of South Florida	Tampa, FL

- Mentored and supervised an undergraduate student for their project towards the Goldwater Scholarship 2023

Neuro-Drone Project Team Leader	March 2021
Neuro-Machine Interaction Lab, University of South Florida	Tampa, FL

- Project designer for Neuro-Drone project development using Enobio device for motor-imagery-based control
- Provided technical expertise as advisor for Neuro-Drone project development to control drones using motor imagery commands and artificial intelligence

Brain-Drone Simulation Project Team Leader	February 2021
Neuro-Machine Interaction Lab, University of South Florida	Tampa, FL

- Managed and supervised masters and undergraduate students for Brain-Drone Simulation project development
- Assigned weekly tasks related to the project and coordinated their activities to ensure successful completion of the projects

SERVICE AND COMMUNITY INVOLVEMENT

Conference Papers Reviewing

ACII - International Conference on Affective Computing and Intelligent Interaction	2025
FG Demo – International Conference on Automatic Face and Gesture Recognition	2025
IEEE SMC – International Conference on Systems, Man, and Cybernetics	2024 and 2023
CHI Late Breaking Work – Conference on Human Factors in Computer Systems	2023

Program Committee

ACII - International Conference on Affective Computing and Intelligent Interaction	2025
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*Demonstrations***Kadoka Academy**, “Brain-Controlled Drones Demo”, St. Petersburg, FL

November 2023

Wiregrass Elementary School, “Flying Drones with Brains,” Drone Simulation Showcase, Wesley Chapel, FL

October 2022

*Volunteering***USF Brain Drone Race**, University of South Florida, Tampa, FL

February 2019

Sambal India, Non-Profit Organization, Noida, India

January 2017

MEMBERSHIPS

Association for Computing Machinery (ACM)

2022 - Present

Institute of Electrical and Electronics Engineers (IEEE)

2023 - Present

SELECTED PRESS RELEASE

*Brain Painting***[Tampa Bay Times]** “Can ‘brain painting’ help ADHD patients? USF looks for answers”, (07/09/2022)Link: <https://www.tampabay.com/news/health/2022/07/06/can-brain-painting-help-adhd-patients-usf-looks-for-answers>**[Yahoo News]** “Can ‘brain painting’ help ADHD patients? USF looks for answers”, (07/06/2022)Link: <https://news.yahoo.com/brain-painting-help-adhd-patients-093000135.html>**[Fox 13 Tampa Bay]** “ADHD treatment using virtual reality”, (06/06/2022)Link: <https://www.fox13news.com/news/usf-professor-uses-brain-painting-to-help-treat-those-with-adhd-through-abstract-art>**[USF Newsroom]** “New brain-painting method developed at USF being tested for ADHD treatment”, (05/20/2022)Link: <https://www.usf.edu/news/2022/new-brain-painting-method-developed-at-usf-being-tested-for-adhd-treatment.aspx>