Sai Krishna Mulpuru

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EDUCATION

Master of Science, Imaging Science, Rochester Institute of Technology, Rochester, New York, USA, 2009 - 2012
- Thesis Project - A Software tool to evaluate and analyze eye tracking raw data
- Imaging Science NIH Graduate Scholarship

Bachelor of Technology, Electronics and Communication Engineering, National Institute of Technology, Warangal, Telangana, India, 2005 - 2009
- First class honors in engineering

RESEARCH INTERESTS

Exploring how combining tangible art and technology affects usability and experience of spaces. Designing alternative and sustainable apps to show transit routes in the city by constant monitoring of pollution levels at various nodes in the city. Visual Perception research using eye tracking technology, to design tools for understanding emotions, visual art, design and thinking processes. Understanding emotions underlying auditory and visual experiences. Exploring creating immersive spaces, communication mediums and materials, and the impact of physical computing in art installations. My past research lies in the fields of designing and developing serious games for neuro stroke rehabilitation, experimenting with eye movements to understand the various mysteries of human visual system, creating documentaries in virtual reality, fMRI image processing, IOT (Internet of things) programming for assistive tools and technologies. Building small scale wind turbines and brain control interfaces has always kept me in wonder and love with the wind and the human mind. Interested in teaching and tinkering with software, hardware and materials to evaluate new technologies and assist nature and mankind

TEACHING, RESEARCH AND PROFESSIONAL EXPERIENCE

Faculty, Experimental Media Arts, **Srishti Institute of Arts, Design and Technology**, Bangalore, India, June 2016 – Present
- ***Machine, Mechanics and the Human Mind****: An introduction to robotics and building robots for artists and designers. Looking at the history of artists' engagement with complexity and systems and working with physical computing, sensors and DIY objects artists and designers can work with robotics in creative ways.*
- ***Sensors Probes and Detectors, I & II:*** *This learning unit involves the exploration of creative and artistic approaches to using electronics, hardware, physical computing and DIY devices, and integrating sensors to virtual and real systems.*
- ***Introduction to Art Science:*** *This studio focuses on understanding the intersection between art and science through various methods like behavioral and cognitive experiments, history and present state of various kinds of art and science installations.*
- ***Workshops:*** *Simulation and modelling, prototyping with mediums and materials, embedding emerging technologies into materials.*

Visiting Faculty, Universal Design, **National Institute of Design,** Bangalore, India,

- **Smart Technologies and Applications**: This course aims at creating familiarity and understanding of various existing and emerging technologies of the present and the state of the art becomes essential in order to conceptualise assistive and adaptive design solutions for people with sensory disabilities concerned with vision, speech, aging, CP, Autism.

Technical Lead, Virtual Reality, Chakravue Media, Hyderabad, Telangana, India, 2015- 2018

- *Shooting and producing 360 video documentary films*
- *Creative direction of 360-degree animation videos from children story books.*

Research Associate, Serious Gaming Lab, International Institute of Information Technology, Hyderabad, Telangana, 2014-2015.

- *Creating games with bio feedback sensors and physical computing for neuro rehabilitation, using principles of VS Ramachandran and Mirror neurons*
- *Designing and conducting experiments with eye tracking technology to understand how the visual system recognizes pedestrian motion while driving at night.*

Technical Officer, National Brain Research Centre, Manesar, Delhi, India, 2013- 2014

- *Developing code for fMRI Image processing in Matlab to calculate volume of Hippocampus in the brain, to diagnose early onset epilepsy, in collaboration with All India Institute of Medical Sciences, Delhi, India*
- *Training fMRI technicians to use the tool for anonymization and uploading data*

Research Assistant, National Technical Institute for Deaf, Rochester Institute of Technology, Rochester, New York, 2011-2012

- *Eye tracking experiments and data analysis to design a multi view learning system for classrooms with deaf students*
- *Using wearable eye trackers to understand the balance of visual focus on interpreter and slides presented in the classroom to get both visual and auditory.*
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Research Assistant, Multi-Disciplinary Vision Research Labs, Rochester Institute of Technology, Rochester, New York, 2009-2011

- *Developing algorithms for analysis and pattern recognition in eye tracking data*
- *Designing a multi modal image retrieval system b conducting eye tracking experiments to understand saccade and fixation maps of dermatologist's eye movements during diagnosis.*

GRANTS

Adobe Corporate Social Responsibility grant for setting up an AR-VR Studio on campus and creating awareness and curiosity in students and general public about Virtual Reality, Augmented reality, creative data collection for research on pollution in the city and conducting workshops on building holograms and 360 videos under ART IN TRANSIT at Cubbon Park Metro Station in Bengaluru and Srishti Institute of Arts, Design and Technology from 2017-2019.

ART INSTALLATIONS/ COMMISSIONED PROJECTS

DE CART – FESTIVAL OF STORIES 2018, Cubbon Park Metro Station – Art in Transit
The cart is a mobile weather station that collects data from the zones it is parked, and sends it to a central server, continuously facilitating the user to experience the environment from anywhere through virtual reality. our cart. This also is an initiative of combining art, science education into a public space.

HOLOGRAMS and VIRTUAL REALITY EXPERIENCES- FESTIVAL OF STORIES 2017, Cubbon Park Metro Station Art in Transit
A large hologram was built and installed outside the ticketing counter, with 3D animations to do branding and advertising of sponsors of Festival of Stories. C of stalls at the exits of the station installed to showcase videos created by participants of our 360-degree video workshop.

THINK TANK – SERENDIPITY GOA 2016, for BioCon and Science Gallery Bengaluru
The Think Tank is a direct physical representation of the complex networking in the brain, depicting thoughts as rain drops, and memory as tank of water. Using advanced brain sensors (EEG) and electronics, the entire system is built to capture the action potentials fired in the pre-frontal cortex, which interactively simulates thunder, lightning and rain.

VR WALKWAY – FESTIVAL OF STORIES 2016, Cubbon Park Metro Station
Virtual Reality walkway is a futuristic walkway with people engaged in virtual reality movies and augmented reality experiences as they travel through metro stations. Short movie VR documentaries and games were developed using sensors like Leap Motion, Unity, Arduino.

EVENTS/ WORKSHOPS

- *Artist and Technical Production In-charge for Festival of Stories 2016, 2017, 2018, at Cubbon Park Metro Station, with ART IN TRANSIT, Bangalore*
- *Public workshops on AR, Holograms, 360 video production with Adobe and Srishti*
- *Public workshops on game design at INNOVATION GARAGE, NIT Warangal*
- *Public workshops on robot building at NIT Warangal*
- *Summer camps in robotics and interactive circuits at Srishti*

PUBLICATIONS IN JOURNALS

Kavita Vemuri, Kulvinder Bisla, SaiKrishna Mulpuru, and Srinivasa Varadharajan, "Do normal pupil diameter differences in the population underlie the color selection of #thedress?," Journal of Optical Society of America A33, A137-A142 (2016), https://doi.org/10.1364/JOSAA.33.00A137

Datta, S., Sarkar, S., Chakraborty, S. et al., “MRI characterization of temporal lobe epilepsy using rapidly measurable spatial indices with hemisphere asymmetries and gender features,” Journal of Neuroradiology, 57: 873, (2015), https://doi.org/10.1007/s00234-015-1540-6

SYMPOSIUM AND CONFERENCE PAPERS

S Mulpuru, K Vemuri, “Driver pupil dilation changes and visual perception of pedestrian movement in illuminance from low to highbeam in naturalistic driving conditions,” Symposium, 38th European Conference on Visual Perception (ECVP), (2015), https://journals.sagepub.com/doi/10.1177/0301006615598674

P. Vaidyanathan *et al*., "Using human experts' gaze data to evaluate image processing algorithms," *IEEE 10th IVMSP Workshop: Perception and Visual Signal Analysis*, Ithaca, NY, 2011, pp. 129-134, (2011), https://doi.org/10.1109/IVMSPW.2011.5970367

R. Li *et al*., "Human-centric approaches to image understanding and retrieval," *Western New York Image Processing Workshop*, Rochester, NY, pp. 62-65, (2010), https://doi.org/10.1109/WNYIPW.2010.5649743

R. Li *et al*, “A Human-centered Content-based Image Retrieval System,” American Medical Informatics Association Anuual Symposium, Washington DC, (2010), Poster Presentation

S. K. Mulpuru and K. C. Kollu, "Intelligent Route Planning for Multiple Robots Using Particle Swarm Optimization," *2009 International Conference on Computer Technology and Development*, Kota Kinabalu, pp. 15-18, (2009), https://doi.org/10.1109/ICCTD.2009.32