MURTHY L R D

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OBJECTIVE

To build usable technology that can impact human lives. To solve challenging problems including the ones yet to be identified. To work at the intersection of technology, design, and human factors.

EDUCATION

PhD | Indian Institute of Science, Bengaluru, India
CENTRE FOR PRODUCT DESIGN & MANUFACTURING, AUG 2017 – PRESENT | CGPA: 8.0/10
Thesis Title: GAZE ESTIMATION IN THE WILD - MODELS, DATASETS AND USABILITY

B. Tech | SASTRA University, Thanjavur, India
ELECTRICAL AND ELECTRONICS ENGINEERING, 2011 – 2015 | CGPA: 8.0/10
Thesis Title: IMPULSE BREAKDOWN TESTING OF NANOFLUIDS

SELECTED PUBLICATIONS

1. **Murthy, L. R. D.,** Vishwakarma H., and Biswas, P (2023 Jan). Helmet-mounted Eye Tracking for Military Aviation. Patent Application (Under filing).
2. **Murthy, L. R. D**., Mukhopadhyay, A., Anand, K., Aggarwal, S., and Biswas, P. (2023, June). Towards Precision in Appearance-based Gaze Estimation in the Wild. In 2023 IEEE/CVF Conference on Computer Vision and Pattern Recognition *(Submitted)*
3. **Murthy, L. R. D.,** and Biswas, P. (2021, June). Appearance-based Gaze Estimation using Attention and Difference Mechanism. In 2021 IEEE/CVF Conference on Computer Vision and Pattern Recognition Workshops (CVPRW) (pp. 3137-3146). IEEE.
4. *Murthy, L. R. D.,* Mukhopadhyay, A., and Biswas, P. (2022, March). Distraction Detection in Automotive Environment using Appearance-based Gaze Estimation. In 27th International Conference on Intelligent User Interfaces (pp. 38-41).
5. **Murthy, L. R. D**., Gyanig Kumar, and Pradipta Biswas. "Efficient Interaction with Automotive Heads-Up Displays using Appearance-based Gaze Tracking." In Adjunct Proceedings of the 14th International Conference on Automotive User Interfaces and Interactive Vehicular Applications, pp. 99-102. 2022.
6. **Murthy, L. R. D**., Brahmbhatt, S., Arjun, S., and Biswas, P. (2021). I2DNet-Design and real-time evaluation of an appearance-based gaze estimation system. Journal of Eye Movement Research, 14(4).
7. **Murthy, L. R. D**., Mukhopadhyay, A., Anand, K., Aggarwal, S., and Biswas, P. (2022, March). PARKS-Gaze-A Precision-focused Gaze Estimation Dataset in the Wild under Extreme Head Poses. In 27th International Conference on Intelligent User Interfaces (pp. 81-84).
8. **Murthy, L. R. D**., and Pradipta Biswas. "Deep Learning-based Eye Gaze Estimation for Military Aviation." In 2022 IEEE Aerospace Conference (AERO), pp. 1-8. IEEE, 2022.
9. Mukhopadhyay, Abhishek, **Murthy, L. R. D**., Imon Mukherjee, and Pradipta Biswas. "A Hybrid Lane Detection Model for Wild Road Conditions." IEEE Transactions on Artificial Intelligence (2022).
10. G. Prabhakar, A. Mukhopadhyay, **Murthy, L. R. D**., M. Madan, S. Deshmukh and P. Biswas, Cognitive load estimation using Ocular Parameters in Automotive, Transportation Engineering, Elsevier 2020.
11. Krishna Sharma, V., **Murthy, L. R. D.,** and Biswas, P. (2022). Enabling Learning through Play: Inclusive Gaze-Controlled Human-Robot Interface for Joystick-based Toys. International conference on social robotics 2022.

12. Krishna Sharma, Vinay, **Murthy, L. R. D**., and Pradipta Biswas. "Comparing Two Safe Distance Maintenance Algorithms for a Gaze-Controlled HRI Involving Users with SSMI." ACM Transactions on Accessible Computing (TACCESS) 15, no. 3 (2022): 1-23.
13. Mukhopadhyay, A., Reddy, G. R., Ghosh, S., **Murthy, L.R.D**., and Biswas, P. (2021, December). Validating social distancing through deep learning and VR-based digital twins. In Proceedings of the 27th ACM Symposium on Virtual Reality Software and Technology (pp. 1-2).
14. **Murthy, L.R.D**., A. Mukhopadhyay, V Yelleti, S Arjun, P Thomas, MD Babu, KPS Saluja, JeevithaShree DV and P. Biswas, Evaluating Accuracy of Eye Gaze Controlled Interface in Military Aviation Environment, IEEE Aerospace 2020. DOI: *https://doi.org/10.1109/AERO47225.2020.9172480*
15. **Murthy, L. R. D.** 2020. Multimodal Interaction for Real and Virtual Environments. In Proceedings of the 25th International Conference on Intelligent User Interfaces Companion (IUI '20). Association for Computing Machinery, New York, NY, USA, 29–30. DOI: *https://doi.org/10.1145/3379336.3381506*
16. VK Sharma, **Murthy, L. R. D**., KPS Saluja, V Mollyn, G Sharma and P Biswas, Webcam Controlled Robotic Arm for Persons with SSMI, Technology and Disability 32 (3), IOS Press 2020.
17. Prabhakar, G., Ramakrishnan, A., Madan, M., **Murthy, L. R. D**., Sharma, V. K., Deshmukh, S., and Biswas, P. (2019). Interactive gaze and finger controlled HUD for cars. Journal on Multimodal User Interfaces, 1-21. DOI: *https://doi.org/10.1007/s12193-019-00316-9*

💼 WORK EXPERIENCE

Engineer | TATA ELXSI
JUNE 2015 – JULY 2017
I worked for Hardware-In-Loop-Systems (HILS) testing and Test Automation tool development for Electronic Control Units (ECU)s in Infotainment Systems of automobiles.

💼 INTERNSHIPS

Visiting Researcher | University of Sussex, United Kingdom
APRIL 2019 – JUNE 2019
At Interact Lab, I worked on Acoustic Cloaking using Scattering cancellation method. I used combinatorial optimization methods and pattern recognition approaches to achieve acoustic cloaking.

Research Intern | University of Bologna, Italy
JAN 2015 – APRIL 2015
I investigated the behavior of nanofluids under impulse voltages. I experimented with ferrofluids and conducted impulse breakdown tests to improve the impulse breakdown strength of transformer oil.

🛠 SKILLS

- Programming:
  C#, Python, Java, CAPL
- Software Packages:
  MATLAB, COMSOL Multiphysics, NI LabVIEW
- Machine Learning APIs:
  TensorFlow, PyTorch
- Sensors:
  Eye Gaze Trackers (Tobii)
  Motion Trackers (Kinect, Opti Track)
  Hand Motion Tracker (Leap Motion)
  Inertial Measurement Unit (XSENS)

💼 ACADEMIC REVIEWER

- Conferences – ACM CHI'23, ACM IUI'23, EuroVis'20, ACM IUI'22, ACM UMAP'22
- Journals – IEEE Sensors Journal, Journal of Multimedia Systems (MMSJ), AIEDAM, International Journal on Social Robotics (IJSR)