Kumar Ashutosh

Graduate Student

thechargedneutron.github.io

kumar.ashutosh.ee@gmail.com

/in/kumar-ashutosh-07

thechargedneutron

Education

Indian Institute of Technology, Bombay
Dual Degree (B.Tech + M.Tech)
Major: Electrical Engineering
Minor: Computer Science
Specialization GPA: **9.57/10**
Overall GPA: **9.0/10**
2016 - 2021 | Mumbai, India

Skills

Experience

Computer Vision, Machine Learning, Reinforcement Learning, Online Learning, Computer Graphics, Augmented Reality, Applied Maths & Statistics, Public Health, Signal Processing, Data Collection

Programming

Python, C++, GLSL, LaTeX	(10k+ LOC)
C#, VHDL, Verilog, MATLAB	(5k+ LOC)
C, HTML, CSS, JS, Swift	(2k+ LOC)

Awards

- **President's Award** for social service
- **Department Color** by EE, IIT Bombay
- **NTSE** - National Talent Search Scholarship
- **KVPY** - for research in Basic Sciences

Talks

- Augmented Reality Applications
- Teaching Methodology of Mathematics

Roles

- **Teaching Assistant** at IIT Bombay
- **Leadership:** Lead a team of 24 academic mentors to guide 150+ students of EE
- **Teamwork:** Coordinated in a team of 20 volunteers to conduct coding events
- **Mentorship:** Guided 15 students to overcome academic and non-academic issues

Summary

Motivated STEM graduate student with strong theoretical background and relevant industry experience. Seeking exciting industry research opportunity at top labs.

Experience

Nov 2019 - Jan 2020 — **Augmented Reality iOS Developer** — 360World, Budapest
- Developed an end-to-end application to record 3D point clouds from Apple TrueDepth camera and integrated with Azure Spatial Anchor
- Extended the prototype to accommodate AR City Tour, AR Snapchat
- Skills & Tools: Computer Graphics, AR, Apple App Development, Unity 3D, Xcode, Firebase, Azure, C#, GLSL, Swift, iPhone X

May 2019 - Jun 2019 — **Research Intern** — R&D Department, Sony Corporation, Japan
- Made prototype devices, experimental protocol and software for evaluation of novel, lightweight and portable ear-EEG systems
- Skills & Tools: Signal Processing, Electrical Engineering, Public Health, Python, OpenBCI, Circuit synthesis & debugging

May 2018 - Aug 2018 — **Student Developer** — Google Summer of Code
- Employed OpenGL to build GPU-accelerated visualization of brain
- Studied the various uses of Vertex, Fragment and Geometry Shader
- Skills & Tools: Computer Graphics, Python, GLSL, Brain Dataset

May 2018 - Jul 2018 — **Visiting Researcher** — National Univeristy of Singapore
- Investigated and obtained statistically significant differences in brain connectivity pattern during creative thinking using EEG
- Skills & Tools: Cognitive Science, BCI, Python, MATLAB, EEG-LAB

Jan 2018 - Jul 2017 — **Open Source Contributor** — scikit-learn - a popular ML library
- Contributed 2k+ lines of code to *scikit-learn* with 12 Pull Requests
- Added a new feature RegressorChain (link) for chained predictions
- Skills & Tools: Machine Learning, Good coding practices, PEP8

Master's Thesis

Ongoing — **Three-Dimensional Voxel Reconstruction from Multi-view Images**
Guide: *Prof. Subhasis Chaudhuri, Director, IIT Bombay*
- Reconstructed three-dimensional 32x32x32 voxel grids of common objects from single and multi-view images using CNN architecture
- Obtained an Intersection Over Union (IoU) of 0.65 in learning single viewpoint – outperforming existing results in literature
- Skills & Tools: Computer Vision, CNN, Python, PyTorch, PyTorch3D

Other skills learnt as a part of curriculum at IIT Bombay include Reinforcement Learning, Multi-armed Bandits, Image Processing, Game Theory and Electronics

Publications

- **K. Ashutosh**, J. Nair, A. Kagrecha, and K. Jagannathan, "Bandit algorithms: Letting go of logarithmic regret for statistical robustness," *submitted to Conference on Neural Information Processing Systems* **(NeurIPS 2020)** – *under review*
- **K. Ashutosh**, S. Consul, B. Dedhia, P. Khirwadkar, S. Shah and S. Kalyanakrishnan, "Lower Bounds for Policy Iteration on Multi-action MDPs," *IEEE Conference on Decision and Control* **(IEEE CDC 2020)**
- **K. Ashutosh**, "Hardware Performance Analysis of Mobile-Based Augmented Reality Systems", *IEEE Conference on Computational Performance Evaluation* **(ComPE)**
- R. Bose, **K. Ashutosh**, A. Bezerianos, N. Thakor, J. Li and A. Dragomir, "A Multilayer Network Approach for Studying Creative Ideation Markers from EEG", *International Conference on Brain Informatics* **(BI-2018)**