Rohan Chacko

Email | LinkedIn | GitHub | Website

Education

International Institute of Information Technology, Hyderabad (IIIT-H), India — *Aug '17 – Present*
B.Tech in Computer Science & Engineering (Honors in Computer Vision) — **CGPA: 9.05/10**
Advisors: ***P.J. Narayanan*** *(Director,IIIT-H) &* ***Avinash Sharma*** — **Major GPA: 9.46/10**

Experience

Research Intern - Robotics Institute, Carnegie Mellon University, U.S.A. — *May '20 – Aug '20*

- Worked (remotely) under Dr. David Held at the R-PAD Lab on zero-shot object segmentation.
- Trained a model using attention mechanisms to improve class-agnostic segmentation performance.
- Analyzed the impact of synthetic object renders as training data on class-based vs. class-agnostic segmentation performance and its potential for zero-shot learning.

Research Assistant - Centre for Visual Information Technology, IIIT-H — *Aug. '19 – Present*

- Working on 3D human reconstruction using non-parametric representations.
- Developed an end-to-end pipeline to reconstruct a 3D body from a single-view using a multi-layered representation of depth and RGB color maps
- Work accepted to **International Conference on 3D Vision (3DV), 2020**
- Currently involved in extending the work to reconstruct humans with loose clothing using multi-view images as self-supervision

Research Assistant - Five Fingers Innovative Solutions, Hyderabad, India — *Aug '18 – Dec '18*

- Developed a software to detect and track 3D medical equipment models in a live camera stream.
- Used feature-less silhouette-based methods to enable robust and efficient tracking.
- Application involves tracking medical inventory in hospitals during surgical operations.

Teaching Assistant - IIIT-H — *Aug '19 – May '20*

- Courses - Data & Applications, Computer Systems Organisation.
- Involves preparing tutorial sessions, creating problem sets and grading assignments for 150+ students.

Publications

- **PeeledHuman: Robust Shape Representation for Textured 3D Human Body Reconstruction**, Sagar Sai Jinka, Rohan Chacko, Avinash Sharma, P.J. Narayanan, *International Conference on 3D Vision (3DV), 2020* [Project Page] [Arxiv Link]

Projects

3D Scene Reconstruction from accidental motion [Link] — *OpenCV, Python/C++*

- Developed a method to utilize camera shake occurring in captured videos to reconstruct a 3D scene.
- Implemented various algorithms such as Kanade-Lucas-Tomasi tracking, SfM, CRFs for energy minimization.

Transparent election fund monitoring using blockchain [Link] — *Azure, Solidity, Web3.js, Django*

- Developed a blockchain application to tackle illegitimate sources of political party funding and improve overall transparency of the funding process during elections.
- Created a new cryptocurrency to be used for receiving and sending funds to political parties that can be verifiably tracked from source to receiver.
- Won **second place** nationally and a **2 Lakh Rupee** cash prize for the **Microsoft India CodeFunDo 2019** hackathon.

Image Reflection removal using ghosting cues [Link] — *Matlab*

- Implemented the CVPR 2015 paper by applying the concept of ghosted reflections using a double-impulse convolution kernel on a single input image.
- Applied a Gaussian mixture model prior over image patches to regularise the optimization and performed half-quadratic regularization to find the optimal value for removing reflections.

Mobile ad-hoc networks for disaster relief [Link] *Java, Django*

- Developed an application that creates a wireless ad-hoc network using mobile phones to communicate relief efforts during natural disasters.
- Each mobile phone in the ad-hoc network sends its GPS co-ordinates to every other mobile device in the network using bluetooth/WiFi hotspots. This allows for faster detection and rescue of people in dangerous areas during natural calamities.
- Won **first runner-up** for the **Microsoft India CodeFunDo 2018** hackathon.

Tic-Tac-Toe AI Bot [Link] *Python*

- Developed an agent that plays a variant of tic-tac-toe using minimax algorithm with alpha-beta pruning and a heuristic function to find the optimal move.

Honors and Achievements

- Selected for **Dean's Merit List** for academic excellence. Awarded to top 10% of the batch
- **Second place** nationally in **Microsoft India CodeFunDo 2019** hackathon
- **19th position globally** for BountyCon 2019 (cybersecurity competition). Organized by **Google and Facebook**
- **16th position nationally** for InCTF 2019 (cybersecurity competition) organized by Amrita university, India
- **Second place** (university-level) in **Microsoft India CodeFunDo 2018** hackathon
- Winner of **Sharjah (United Arab Emirates) Sustainability Award 2015** for creating a novel surveillance system to protect the biodiversity hotspots in U.A.E. Awarded by the Sharjah government
- Won the prestigious **Sharjah (United Arab Emirates) Award 2015** for overall excellence in curricular and extra-curricular activities. Awarded by the Ruler of Sharjah, U.A.E, to students who have excelled in academic and extra-curricular activities
- **One of 90 Global Finalists** for the **Google Science Fair 2014**. Created an accident detection and location system which automatically sends GPS location of a vehicle in an accident to emergency rescue services [YouTube Link]
- Won the prestigious **Sheikh Hamdan Award 2014** for overall excellence in curricular and extra-curricular activities. Awarded by the Finance Minister of United Arab Emirates to the top performing students of the country.

Technical Skills

Languages: Python, C, C++, MATLAB, SQL, Bash, JavaScript, HTML, CSS
ML/CV Libraries: PyTorch, Tensorflow, OpenCV, scikit-learn
Miscellaneous: Blender, Meshlab, OpenGL, Open3D, Numpy, Pandas, Django, LaTeX, Git

Relevant Courses

Computer Vision, Statistical Methods in AI, Digital Image Processing, Artificial Intelligence, Data Structures & Algorithms, Graphics, Probabilistic Graphical Models, Optimisation Methods, Graph Theory

Extra-Curriculars

- Head of the the Cyber-Security Club of IIIT-Hyderabad
- Core member of the Art Society of IIIT-Hyderabad