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 '21*
- Courses - Computer Vision, Computer Systems Organisation, Data & Applications.
- Involves preparing tutorial sessions, creating problem sets and grading assignments for 250+ students.

PUBLICATIONS

- **PeeledHuman: Robust Shape Representation for Textured 3D Human Body Reconstruction**, Sagar Sai Jinka, <u>Rohan Chacko</u>, 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 List** for academic excellence. Awarded to top 5% 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