KUNAL GUPTA

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EDUCATION

University of California San Diego, La Jolla, CA
Ph.D. Computer Science (3D Vision and Graphics) — Sept. 21 - Present
M.S. Computer Science — GPA: 3.68/4.0 — Sept. 18 - June 20

Birla Institute of Technology and Science, Pilani, India
B.Eng. Electrical and Electronics Engineering — GPA: 8.8/10.0 — Aug 14 - May 18

PUBLICATIONS

Gupta, K., Chandraker, M. "Neural Mesh Flow: 3D Manifold Mesh Generation via Diffeomorphic Flows." NeurIPS 2020 (Spotlight - 4.1% acceptance rate)

Gupta, K., Sekhar, N., Vigneault, D. M., Scott, A. R., Colvert, B., Craine, A., ... & Contijoch, F. J. (2021). Octree Representation Improves Data Fidelity of Cardiac CT Images and Convolutional Neural Network Semantic Segmentation of Left Atrial and Ventricular Chambers. Radiology: Artificial Intelligence, 3(6), e210036.

RESEARCH EXPERIENCE

Adobe Research
Research Intern with Vladimir Kim, Breakthroughs In Graphics (BIG) Lab — May 21 - Sept 21

· Researched detail preserving mesh deformation that leverages gradient domain prediction using deep learning.
· Developed method allows interactive rate deformation of (1M+) tetra-meshes – 1000x faster than prior art.

NVIDIA Research
Research Intern with Stan Birchfield, Learning Perception Research Group — March 21 - May 21

· Researched differentiable iso-surface extraction of implicit functions to generate guaranteed manifold meshes
· Developed a novel algorithm for 3D manifold mesh generation of arbitrary topology

Centre for Visual Computing, UC San Diego, CA
Research Assistant with Prof. Manmohan Chandraker — Jan. 19 - June 20

· Improved 3D mesh reconstruction quality by 50 times over existing methods through researching a novel deep learning algorithm: *"Neural Mesh Flow"* - that leverages NeuralODEs for learning shape diffeomorphism
· Investigated technologies like Shape Auto-Encoders, Graph Convolutional Neural Networks, explicit and implicit shape representations and mesh repair techniques. Published at NeurIPS 2020 (spotlight)
· Composed maintainable Python code utilizing libraries like Pytorch, OpenCV, open3D and ShapeNet dataset

Wireless Communication Systems Networking Group, UC San Diego, CA
Research Assistant with Prof. Dinesh Bharadia — April 19 - June 19

· Evaluated 3 segmentation and pose estimation algorithms for novel bi-directional millimeter radar sensor
· Implemented modified PointNet improve segmentation and pose estimation accuracy by 15%

DroneLab, Contextual Robotics Institute, UC San Diego, CA
Research Assistant with Prof. Falko Kuester — Sept. 2018 - Dec. 2018

· Demonstrated drone localization in GPS denied environment based on Ultra-Wide Band RF technology
· Built programs in C, Python based on Mavlink protocol for enabling drone-anchor communication

Bio Robotics Lab, National University of Singapore (NUS), Singapore
Research Intern with Prof. Yu Haoyong — June 2017 - Dec. 2017

· Researched control algorithm that integrates seamlessly with rehabilitation robot improving stroke therapy
· Demonstrated on real subjects that control algorithm stops stumbling patient under 1 second
· Programmed sensor fusion via Kalman filter in C to work on real-time embedded Linux system

TALKS

2020 : *"Physically Realizable Representations"* at Center for Visual Computing UC San Diego

OUTREACH AND INCLUSION

2020 : Alumni Career Orientation panel, UCSD CSE Advising
2019 : Diversity and Inclusion panel, UCSD ECE Orientation
2019 : Career Orientation panel, UCSD CSE Advising

HONORS AND AWARDS

2021 : Awarded Graduate Fellowship at UC San Diego which covers tuition and stipend for one year
2020 : Award of **USD 5000** from UC San Diego School of Medicine to cover tuition related expenses
2018 : Award of **INR 30,000** from IPCD BITS Pilani to cover expenses for Bachelor's Thesis at NUS
2013 : Cleared **Regional Mathematics Olympiad** (RMO) from Chandigarh Region.

TEACHING EXPERIENCE

Winter 2020	WES 237A Intro to Embed System Design (TA)
Fall 2019	CSE 252A Computer Vision I (co-TA)
Spring 2019	CSE 176/276E Robotic System Design and Implementation (TA)

PROFESSIONAL SERVICE AND VOLUNTEERING

ICLR 2022	Reviewer
ICLR 2021	Student Volunteer
ICML 2021	Student Volunteer
NeurIPS 2020	Student Volunteer

REFERENCES

Manmohan Chandraker
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