Akash Sengupta

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EDUCATION

PhD in Computer Vision and Machine Learning　　　　　　　　　October 2019 - Present
University of Cambridge
- Supervisors: Prof. Roberto Cipolla and Dr. Ignas Budvytis.
- Research interests: 3D human shape and pose estimation, probabilistic 3D reconstruction.

MEng. in Engineering　　　　　　　　　　　　　　　　　　　October 2015 - July 2019
University of Cambridge
- Specialisation in Information and Computer Engineering.
- Final Year Result: Honours with Distinction (1st Class), Rank: Top 5%.
- Awards: Jesus College Scholarship (2018, 2019), Jesus College Prize (2019), Best MEng. Project Presentation (Information Engineering, 2019).

SELECTED PUBLICATIONS

A. Sengupta, I. Budvytis and R. Cipolla. HuManiFlow: Ancestor-Conditioned Normalising Flows on SO(3) Manifolds for Human Pose and Shape Distribution Estimation. **CVPR 2023**. [ArXiv] [Code]

A. Sengupta, I. Budvytis and R. Cipolla. Hierarchical Kinematic Probability Distributions for 3D Human Shape and Pose Estimation from Images in the Wild. **ICCV 2021**. [ArXiv] [Code]

A. Sengupta, I. Budvytis and R. Cipolla. Probabilistic 3D Human Shape and Pose Estimation from Multiple Unconstrained Images in the Wild. **CVPR 2021**. [ArXiv]

A. Sengupta, I. Budvytis and R. Cipolla. Synthetic Training for Accurate 3D Human Pose and Shape Estimation in the Wild. **BMVC 2020**. [ArXiv] [Code]

EMPLOYMENT EXPERIENCE

Research Intern　　　　　　　　　　　　　　　　　　　　　April 2022 – July 2022
Microsoft Mixed Reality + AI Lab　　　　　　　　　　　　　　　　Cambridge, UK
- Research towards real-time holistic human pose estimation (body + hands) from images using transformer-based models trained on synthetic data.
- Supervised by Dr. Sadegh Aliakbarian and Dr. Pashmina Cameron.

Machine Learning Intern　　　　　　　　　　　　　　　　　June 2018 – August 2018
Cambridge Quantum Computing　　　　　　　　　　　　　　　　　Cambridge, UK
- Applied deep reinforcement learning (DQN) to the qubit routing problem, which involved minimising the use of swap gates when running algorithms on topologically-constrained (i.e. nearest-neighbour) quantum architectures.
- Benchmarked reinforcement learning against traditional combinatorial optimisation methods (e.g. simulated annealing, genetic algorithms). Results are documented in this preprint.
- Supervised by Dr. Steven Herbert.

Software Intern　　　　　　　　　　　　　　　　　　　　　Jun 2017 – August 2017
PragmatIC　　　　　　　　　　　　　　　　　　　　　　　　Cambridge, UK
- Designed and implemented software for an integrated circuits testing rig.
- Front-end: GUI design with Python and PyQt, Back-end/database: MySQL

Software Intern　　　　　　　　　　　　　　　　　　　　　Jun 2016 – September 2016
PCCW Solutions　　　　　　　　　　　　　　　　　　　　　　Hong Kong
- Implemented software (in C++) for sensors (GPS/Radio) on a drone to be used for testing and maintenance of instrument landing systems (ILS) at Hong Kong International Airport.

TECHNICAL SKILLS

Programming Languages: Proficient in Python, Working knowledge of MATLAB and C++.
Software Frameworks: PyTorch, NumPy, OpenCV, PyTorch3D, TensorFlow (working knowledge).