# 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**.

**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. Probabilistic Estimation of 3D Human Shape and Pose with a Semantic Local Parametric Model. **BMVC 2021**.

**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

**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).