

# Akash Sengupta

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## EDUCATION

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### 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

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**A. Sengupta**, T. Alldieck, N. Kolotouros, E. Corona, A. Zanfir and C. Sminchisescu. DiffHuman: Probabilistic Photorealistic 3D Reconstruction of Humans. **CVPR 2024**. [[ArXiv](#)] [[Project Page](#)]

**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

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### Research Intern

August 2023 – December 2023

*Google Research*

*Zurich, Switzerland*

- Developed a novel probabilistic approach towards photorealistic 3D human reconstruction using DDPMs.
- Hosted by Dr. Thimo Alldieck, Dr. Nikos Kolotouros and Prof. Cristian Sminchisescu

### 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*

- Investigated the viability of deep reinforcement learning applied to the qubit routing problem on topologically-constrained quantum architectures. 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

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**Programming Languages:** Proficient in Python, Working knowledge of MATLAB and C++.

**Software Frameworks:** PyTorch, NumPy, OpenCV, PyTorch3D, TensorFlow.