Douglas Tilley

PhD Candidate in Accountable, Responsible and Transparent Artificial Intelligence

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Personal Profile

I am a PhD Candidate in the Accountable, Responsible and Transparent Artificial Intelligence (ART-AI) Centre for Doctoral Training at the University of Bath, UK. My expertise is in Robotics, Machine Learning, Control and Design. I have gained research insights and grown inspiration through my PhD, and progressed further with my research position at CENTAUR at the University of Bath. I have a long-standing interest in research, inspired by a short placement in the Robotics department at RAL Space. I aim to kick-start an enduring research portfolio within the Robotics and AI Industries. I pride myself on being a versatile learner, and a worker with high motivation levels. I am always looking to generate maximum work output and efficiency, which is supported by being a hands-on and technical minded individual with sound analytical, mathematical and IT skills. Teamwork, clear communication and a positive attitude are core values I uphold, and are qualities that I believe any organisation can benefit from.

Skills

Programming	Python [NumPy, Pandas, OpenCV, Keras, PyTorch], C/C++/Arduino, ROS, MATLAB, Docker, Anaconda
Design	Mechanical CAD [Solidworks, Fusion 360/Inventor], Electrical CAD [Proteus, KiCAD, Eagle].
Manufacture	Soldering, Electrical Testing, Composites [Fibreglass/Carbon Fibre], 3D Printing[FDM].
Miscellaneous	Linux, Shell [Bash], LaTeX [Overleaf], Microsoft Office, Git.
Soft Skills	Independent, Leadership, Teamwork, Interdisciplinary, Problem-solving, Adaptability, Documentation, Engaging Presentation.

Work Experience

University of Bath *Bath, UK*

University of Bath Demonstrator *September 2021 - Current*

- Demonstrator for AI Challenge, **teaching PhD students** prototype engineering.
- Consultant and demonstrator for UAS related modules, including 3rd year GBDP and **consultant for Masters projects** relating to electrical aspects of UAVs.
- Teacher and demonstrator for 1st year Robotics and IMEE.

Tianjin University *Tianjin, China*

Academic Exchange *November 2023 - September 2024*

- **Research lead on three multi-modal studies** for Human activity recognition of 25 participants.
- Interfacing and synchronizing medical and research grade sensors for Motion capture(**Noraxon, VICON, Neuracle**).
- Development of a **custom android app** to accurately timestamp data.

University of Bath *Bath, UK*

Research Assistant *July 2019 - September 2021*

- Design, fabrication, and maintenance of bespoke UAVs for **data gathering and analysis** to research the micro-electrical properties of Stratiform clouds.
- Construction, maintenance, and thorough testing of bespoke sensors to integrate with UAS in a research environment and **tested in real-world applications**. Post-testing analysis, adaption and improvement of externally designed sensors.
- Collaboration and research with research institutes in independent countries **directing, leading and teaching** researchers and students.
- Chief Manual Pilot, Automatic Pilot and Field Engineer for UAS operations in the UK and overseas in hostile climates. **Person in Command of multiple senior researchers** during UAS operations acting in VLOS and BVLOS at altitudes of up to 6000ft.
- In-depth knowledge of UK UAV related CAA documentation (CAP722, ANO 2020), including **completion of multiple Operating Safety Cases**.
- **Proven early career research output** producing multiple novel research outputs with media coverage**(Sky, ITV, Guardian)**.

University of Plymouth; UKRI STFC *Plymouth; Edinburgh; Harwell, UK*

Additional Jobs *January - July 2019; July-August 2014*

- University of Plymouth Course Representative
- UKRI Summer Placements, Royal Observatory Edinburgh, Rutherford Appleton Labs Space

Publications

Journal Articles

Ionic Charge Emission Into Fog From a Remotely Piloted Aircraft
R. Giles Harrison, Keri A. Nicoll, Graeme J. Marlton, Douglas J. Tilley, Pejman Iravani
Geophysical Research Letters 49.19 (2022) e2022GL099827. 2022

Demonstration of a Remotely Piloted Atmospheric Measurement and Charge Release Platform for Geoengineering
R. Giles Harrison, Keri A. Nicoll, Douglas J. Tilley, Graeme J. Marlton, Stefan Chindea, Gavin P. Dingley, Pejman Iravani, David J. Cleaver, Jonathan L. Bois, David Brus
Journal of Atmospheric and Oceanic Technology 38.1 (2021) pp. 63–75. American Meteorological Society, 2021

Conference Proceedings

Shallow hierarchical CNN–LSTM for activity recognition to integrate postural transition states
Douglas Tilley, Uriel Martinez-Hernandez
2023 IEEE Sensors, 2023, Vienna, Austria

Electrostatic Charging of Propellors on Unmanned Aerial Vehicles
Douglas Tilley, Kerianne Nicoll, Pejman Iravani, David Cleaver, Jonathan Du Bois
2021 ESA Annual Meeting, 2021, Online

University Projects

Wearable Enhanced Awareness Device (Stage 5, 1st Class) *Plymouth, UK*

University of Plymouth *Sept 2018 - July 2019*

- In a team environment, we designed and developed a **multi-sensor system using LiDAR and RADAR**. The device provided haptic feedback to a user using BLE communications. I focused on circuit design, CAD, power systems and report writing.

Measuring Far Peripheral Vision (Stage 3, 1st Class) *Plymouth, UK*

University of Plymouth *Sept 2017 - July 2018*

- Working alongside the optometry department at the University of Plymouth, I developed a **Client Server Chatbot** to control a precise servo positioned laser for research on far peripheral vision.

Education

University of Bath *Bath, UK*

PhD in ART-AI, Computer Science *Sept 2021 - Current*

- **Smart Cyber-Physical Systems for Multimodal Human-Robot Collaboration**.
- Integrated MPhil in Accountable, Responsible and Transparent Artificial Intelligence.
- Demonstrator for 3 Robotics and 2 UAV related modules, teaching PhD to 1st year.

University of Plymouth *Plymouth, UK*

Robotics MEng (Hons) 2:1 *Sept 2015 - 2019*

- Course Representative
- Stage 5 Module Overview: Topics in Advanced Intelligent Robotics, Advanced Robot Design, Science and Technology of Autonomous Vehicles, MEng Project. **Average 72% for Stage 5**.

References available upon request.