


Christopher Edwin Mower

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 Nationality: UK

EDUCATION

University of Edinburgh

PhD Informatics [iCASE Studentship funded by Costain]

Edinburgh, UK
(expected) December 2021

Imperial College London

MSc Computing

London, UK

August 2016

University of Manchester

MSc Applied Mathematics with Numerical Analysis [dissertation funded by NAG]

Manchester, UK

August 2015

University of Sheffield

BSc Mathematics

Sheffield, UK

August 2012

PUBLICATIONS

Christopher E. Mower, João Moura, Sethu Vijayakumar, “*Skill-based Shared Control*”, Robotics: Science and Systems (R:SS), 2021. [Links: paper, video, presentation, poster]

Christopher E. Mower, João Moura, Sethu Vijayakumar, “*Modulating Human Input for Shared Autonomy in Dynamic Environments*”, IEEE RO-MAN, 2019. [Links: paper, pdf]

Christopher E. Mower, Wolfgang Merkt, Sethu Vijayakumar, “*Comparing Alternate Modes of Teleoperation for Constrained Tasks*”, IEEE CASE, 2019. [Links: paper, pdf, preprint, video]

Wolfgang Merkt, Yiming Yang, Theodoros Stouraitis, **Christopher E. Mower**, Maurice Fallon, Sethu Vijayakumar, “*Robust shared autonomy for mobile manipulation with continuous scene monitoring*”, IEEE CASE, 2017. [Links: paper, pdf, video, outreach demo, press (BBC), press (Made In Leeds TV)] **[First prize for “Greatest Potential For Positive Impact”, Robots for Resilient Infrastructure Challenge, 2017]**

EXPERIENCE

University of Edinburgh

Research Associate

Edinburgh UK
September 2021 — Present

- Collaborating on EU-funded projects such as HARMONY and ORCA Hub.

University of Edinburgh

Lab demonstrator

Edinburgh UK
January 2019 — June 2020

- Provided expertise in a supervisory role, for the course System Design Project (SDP), on human-robot interaction, usability testing, and interfaces.
- Role additionally involved marking assignments, ongoing student and group assessment, and bi-weekly demonstration assessment.

The Numerical Algorithms Group (NAG)

Numerical software developer intern

Manchester, UK
June 2014 — October 2014

- Analyzed and implemented the routine G02ANF in FORTRAN that computes a correlation matrix, subject to preserving a leading principle submatrix by applying the smallest uniform perturbation of the remainder of the approximate input matrix.
- Routine included in the Mark 25 NAG Library and NAG Toolbox for MATLAB.
- Acknowledged as a code contributor to the NAG Library.

University of Manchester

Research intern

Manchester, UK
May 2014 — October 2014

- Implemented a method in Python that computes a unit triangular matrix with prescribed singular values.
- Project in collaboration with Professor Nicholas J. Higham, FRS.

Ryanair

Engineer intern

Stansted Airport, UK
May 2014 — October 2014

- Assisted maintenance checks and repairs on Boeing 737-800 aircraft.

SKILLS

- **Programming:** Most fluent in Python, then MATLAB, FORTRAN, and C++. Some experience with Lisp, and Lua.
- **Hardware:** Experience using KUKA LWR Arm, Clearpath Husky UGV, and Universal Robot 5 (UR5) Arm.
- **Operating systems:** Most experienced using Ubuntu and Mac OS. Some experience using Windows.
- **Libraries, packages, and frameworks:** ROS/ROS2, Git, CasADi, SNOPT, IPOPT, LAPACK, Matplotlib, Numpy, Scipy, Pandas, PyBullet, OpenAI Gym, Scikit-learn, NAG Library, V-REP, and OpenCV.
- **Writing and editing code:** \LaTeX , Emacs, and Vim. Some experience with Visual Studio Code.
- **Time management:** Org-mode (for Emacs).

PROJECTS

- **ROS-PyBullet Interface** (*currently private, release planned in next several months*): full physics simulation of a robot and environment in PyBullet, interfaced with ROS. Can be used alongside real robots where the user need only remap ROS topics.
 - Written in Python within a ROS package.
 - I am the lead developer alongside other core contributors from the SLMC Group, University of Edinburgh.
- **EXOTica:** an extensible tool-set for inverse kinematics, trajectory optimization, and optimal control with a design advocating modularity, extensibility, and integration with ROS.
 - Written in C++ with bindings for Python.
 - Summary of my contributions: several task maps, modifications/additions/bug-fixes to core functionality, and Python bindings; a facility that allows a user to interactively tune a cost function.

RESPONSIBILITIES

- Reviewer: ICRA, CASE.
- Vice President for SIAM Student Chapter, University of Manchester, Sept 2014 — Sept 2015.
- Session chair, SIAM Student Chapter Conference, 2014.
- Program Representative for MSc Group, University of Manchester, Sept 2014 — Sept 2015.
- School of Mathematics Board Member, University of Manchester, Sept 2014 — Sept 2015.
- Team Captain for University of Sheffield Badminton Club, University of Sheffield, Sept 2010 — Sept 2012.

ADDITIONAL

- Professional qualifications: First aid at work (St. Johns Ambulance, UK), National Pool Lifeguard Qualification (Royal Life Saving Society, UK).
- Personal interests: Badminton, Guitar.