Reuben Docea

CV

British Citizen
Located in:
Dresden, Germany
✉ *docear@protonmail.com*

Throughout my adult life, I have pursued promising avenues for positive societal impact and personal growth, with success in diverse contexts: from establishing a university society to 3D-print prosthetic devices for children in Glasgow, to working on low-footprint robotic agriculture, and researching at the interface of computer vision and minimally invasive surgery. This ability to identify impactful future trends was highlighted at a recent lab retreat, where my presentation on the significance of broader AI developments for my work was recognised as the "most inspiring talk". As my time at the German Cancer Research Center concludes, I am eagerly seeking to join a new initiative with a clear and compelling vision in this period of transformation. For the right role and project, I offer hard work, enthusiasm, team spirit, initiative, and dedication.

Education

2014–2019   **MEng Biomedical Engineering, 1st Class**, *The University of Glasgow*, Scotland.
Modules of Note: Control, Digital Signal Processing, Embedded Programming, Robotics, Signal Processing of Biosignatures, Simulation of Engineering Systems, Statistics

Employment Record

2020-Present   **Graduate Researcher**, *National Center for Tumor Diseases*, Dresden, Germany.
Thesis: "Learning to Estimate Soft Tissue Deformation from Laparoscopic Surgery Videos in a Surgical Navigation Context"
AI-driven computer vision methods for surgical navigation systems (publications - Google Scholar). Key projects and achievements include:

- **ARAILIS:** Led the ROS-based integration of a navigation system for minimally invasive liver surgery, focusing on SLAM. This work produced six research publications, a ROSCon 2022 keynote, a public code repository. See this video demonstration.
- **Surgical Data Collection:** Initiated and lead a project with the Chinese University of Hong Kong and University Hospital Dresden to gather an in-vivo dataset for 4D reconstruction evaluation. I built a complex ROS2 system to synchronize a da Vinci Xi Endoscope, a Structured Light Camera, and Optical Tracking, and handling stereo and hand-eye calibrations. I oversee time-sensitive data collection in the operating room, working closely with surgical staff to ensure the process is smooth and effective, and often communicating in both English and German.
- **CloudSkin:** Developed intelligent orchestration infrastructure for an EU project with Dell; integrated AI surgery methods into a streaming platform and built a Kubernetes+Docker cluster simulating a multi-operating room environment.
- **NavigationBox:** Actively co-developing a flexible, AR-based surgical navigation solution using ROS2 and AI. We are collaborating with regulatory affairs experts to pursue regulatory approval.
- **Student Supervision:** Supervised multiple Master's/Bachelor's theses and group projects. Two years of coordinating Group Projects modules (Komplexpraktikum & Team Project).

2019-2020   **Robotics Engineer**, *Small Robot Company*, Southampton, England.
Engineered and integrated advanced vision systems to expand robot capabilities, working in close collaboration with computer vision and data science experts.

- Developed C++ & ROS applications for imaging hardware, including stereo-calibration and matching with custom stereo cameras.
- Led camera/lens specification and conducted hyperspectral imaging experiments to inform automated weeding solutions.

Experience & Achievements

2018-2019   **Masters Project: Signal Processing and Statistics**, *Biomechatronics and Neurorehabilitation Laboratory of Chalmers University of Technology*, Gothenburg, Sweden.

Independently researched, planned and carried out 6 month project to completion for improving real-time Machine-Learning-based control of motorised prostheses.
- MATLAB for statistics, signals processing and pattern recognition

2017-2018   **Founder and President of *Handprints - e-NABLE Scotland***, *The University of Glasgow*, Glasgow, Scotland.

As founder and president, I established and led a student society that designed and 3D-printed prosthetic devices for local individuals and ran educational initiatives in schools. It still receives enthusiasm and support from academics and students to this day.
- Secured a *Chancellor's Fund* Grant for the purchase of a 3D Printer.
- Won the *Let's Make It Happen* video competition grant.
- Nominated for a national *Herald Higher Education* award.
- Led and coordinated multiple student groups through the prosthetic design process.
- Designed a novel 3D-printed prosthetic device for cycling.

2017   **Presented at Undergraduate Research Conference**, *The University of Glasgow*, Glasgow, Scotland.

Delivered presentation on Tissue Engineering and Summer Research to 150+ people, having honed presentation skills with postgraduate mentors.

Technical Skills

Languages	Python, C++, MATLAB
Frameworks	ROS, Linux, Git/GitHub, Docker, Kubernetes
Software	Solidworks, Meshmixer, LaTeX

Interests - some of many

Cycling	Trips with friends: Austria & Czechia, Switzerland, and soon the Black Forest
Board Games	I organise a board games evening at work, where we play Cyclades, Inis, and Kemet
Creative Pursuits	3D Modeling (partly), 3D printing & painting 'trophy' for Kemet; Building an outdoor Fire-court from stone; Making a Battlelore-inspired Board Game App with AI.

Languages

English	**Native**
Romanian	**Native**
German	**B2**

References

Academic	Past Employer
- Dr. Julien Reboud	- Thomas Burrell