Charlotte **Brass**

cb@charlottebrass.org | +44 (0) 7565 133 593 | www.charlottebrass.org
linkedin.com/in/charlotte-brass/

EDUCATION

Oct 2020 - Present	**University of Cambridge, England** *Doctor of Philosophy (PhD) in Medical Engineering* Thesis: Biomechanics of Traumatic Brain Injury Supervisors: Prof. Michael Sutcliffe, Dr. Virginia Newcombe, Dr. Angelos Kolias
Sept 2015 - Jul 2020	**Cardiff University, Wales** *Master of Engineering (MEng) in Mechanical Engineering with Year in Industry* Graduated with First Class Honours, average grade of 82% or 4.0 GPA equiv. Industrial placement: Williams Racing (Formula 1)

ENGINEERING EXPERIENCE

Oct 2020 - Present — **University of Cambridge** — **Cambridge, England**

PhD in Biomechanics of Traumatic Brain Injury

Examining time-based evolution of severe traumatic brain injury post surgical intervention through finite element analysis and novel application of computer imaging techniques.

- Developed multi-language medical imaging analysis workflow (Bash, Python) to extract decompressive craniectomy (DC) brain expansion contours and relate to mathematical model of expansion shape.
  - Completed as part of a collaboration I established with Ellen Kuhl (Stanford University) and Alain Goriely (University of Oxford).
- Created comparitive finite element models of decompressive neurosurgery techniques to identify optimal surgical approaches and improve patient outcome in varying clinical scenarios.

Jun 2019 - Sep 2019 — **Diamond Light Source** — **Oxford, England**

Mechanical Design Engineer

- Optimized the cryogenic sample preparation of micro-protein crystals
- Evaluated risk to samples during each stage of the preparation process by developing rapid understanding of biological process needs
- Provided recommendations to improve efficiency and quality of the preparation procedure, summarised in a comprehensive report.

| Aug 2017 - Aug 2018 | **Williams Racing (Formula 1)** | **Oxford, England** |

Junior Design Engineer

- Operated specialized ATLAS data analysis software to quantify hydraulic pump performance metrics across various operational parameters
- Designed hardware components (radiator ducts, electronic packaging, fuel cell manufacture) in NX CAD software using systematic engineering principles (DFM, GD&T)
- Maintained records of service documentation for safety-critical parts to ensure traceability, accountability and regulatory compliance

TECHNICAL SKILLS

Skill	Experience	Technologies & Tools
Programming & Software Development	6+ Years	Python • Bash • Git • LaTeX
Data Processing & Analysis	4 Years	NumPy • Pandas • SciPy • Matplotlib
Medical Image Processing	4 Years	FSL • Mimics • 3-Matic • MeshLab
Finite Element Analysis (FEA)	4 Years	ABAQUS
Computer Aided Design (CAD)	6 Years	NX • Creo • SolidWorks
Engineering Standards	6 Years	DFM • GD&T • PLM

BEYOND TECH

Positions of Responsibility

Jun 2024 - Present	Women and Marginalised Genders Representative
May-Jun '22, '23, '24	Undergraduate Supervisor and Discussion Forum Chair
Feb-May 2021	Outreach for Local Underprivileged Schools

Sports

Jul 2024 - Apr 2024	Fatcake Cycling Club: Member and Peninsula Chapter ride leader
Sep 2021 - Jun 2023	Pembroke College Boat Club Ladies 1st VIII
Sep 2019 - Sep 2021	Competition road cyclist with Will Houghton Racing Team
Sep 2015 - Present	University Triathlon: Cardiff, Cambridge and Stanford

Music: Piano Grade 8 • Flute Grade 8 • Aural & singing

Other: Travel • Writing • Cooking • Personal static website and blog at *www.charlottebrass.org*

REFERENCES

Michael Sutcliffe, mpfs1@cam.ac.uk
Dept. of Engineering, University of Cambridge, Trumpington Street, Cambridge, CB2 1PZ
Richard Roebuck, rlr20@cam.ac.uk
Dept. of Engineering, University of Cambridge, Trumpington Street, Cambridge, CB2 1PZ