

JAKE BEWICK

Biomedical Engineer

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📍 London, UK

SUMMARY

Doctoral researcher building electromagnetic simulations for deep-tissue imaging. Passionate about the intersection of engineering and biology. Whether it's designing implants for bone repair, modelling the brain's connectivity, or using machine learning to enhance fetal ultrasound imaging, I enjoy solving challenging problems with real-world impact.

EDUCATION

PhD - Medical Physics and Biomedical Engineering University College London

- 2020 - Ongoing

A rigorous computational framework for investigating the transmission and focusing of light in biological tissue via photoacoustic wavefront shaping

MRes - Medical Imaging University College London

- 2019 - 2020
- First Class

MSci - Biomaterials and Tissue Engineering University College London

- 2018 - 2019
- First Class, Top of Class

BEng - Biomedical Engineering University College London

- 2014 - 2018
- First Class

PUBLICATIONS

Simulating optical memory effects and the scanning of foci using wavefront shaping in tissue-like scattering media

European Conference on Biomedical Optics, Optica, 2023

Full-wave simulation of focusing light through scattering layers using the T-matrix method

Wavefront Control for Biological Systems, SPIE, 2023

A computational framework for investigating the feasibility of focusing light in biological tissue via photoacoustic wavefront shaping

Photons Plus Ultrasound: Imaging and Sensing, SPIE, 2023

Efficient full-wave simulation of wavefront shaping to focus light through biological tissue

Optics and the Brain, Optica, 2022

PROJECTS

Fetal Ultrasound Classification using Machine Learning

Trained convolutional neural network to classify structures in fetal ultrasound images

Structure-Function Modeling in Brain Networks

Developed computational models to explore structural-functional brain connectivity using neuroimaging data

CAD-Based Fracture Stabilization System

Engineered a two-part fixation system for osteoporotic femoral fractures to enhance biomechanical stability and healing

AWARDS

Biomaterials Medal

Worshipful Company of Armourers & Brasiers

Dean's List

University College London

Best Project

Spring Industrial Liaison Forum

SKILLS

Basic Software

Microsoft 365, LaTeX, Git, VS Code, Jupyter

Programming

MATLAB, Python, R, Fortran, Bash

Data Science and Machine Learning

Tensorflow, Pandas, NumPy, SciPy, Matplotlib, SPSS

Simulation and Engineering Tools

Abaqus, Ansys, STAR CCM+, Solidworks, Fusion 360, LTspice, Simulink