Abraham Yuan

Email: hengqixuan.yuan.22@ucl.ac.uk | Phone: +49 155 65738354 | GitHub: Link | LinkedIn: Link

Education

MEng Biochemical Engineering Sep 2022 – Jun 2026 (ongoing)
University College London (UCL), United Kingdom

Research & Industrial Experience

Enzyme Purification & Downstream Process Development — R&D Intern Oct 2025 – Oct 2026 (ongoing)
Roche Diagnostics GmbH, Penzberg

- Developed a bisulfite-free enzymatic strategy for non-destructive **5-methylcytosine (5mC)** detection in cfDNA
- Established a high-throughput screening workflow for AI-designed DNA glycosylase libraries (>1,000 variants)
- Applied Design of Experiments (DoE) to quantify the effects of pH, temperature, and cofactors on refilling efficiency
- Optimised protein expression and assay conditions to improve **screening robustness and reproducibility**

Paper-based LAMP Biosensors and Automated Platform — Research Assistant May 2025 – Aug 2025
Cranfield University

- Developed a Python based automated image-analysis pipeline for paper-based LAMP biosensors using OpenCV and machine learning model
- Implemented LAB colour-space features and mathematical modelling for quantitative signal extraction
- Trained a logistic regression classifier achieving 87% accuracy on labelled biosensor images

Quality Control of In Vitro Diagnostics — Experiment Assistant Jul 2023 – Sep 2023
Beijing WanTai Biological Pharmacy Co., Ltd.

- Performed QC testing of in vitro diagnostic reagents using automated analysers
- Assisted with PCR-based analysis of clinical serum samples from hospital partners
- Conducted statistical analysis to evaluate assay accuracy, repeatability, and data consistency

Engineering Projects

Multivariate Optimisation of *Pichia pastoris* Expression via DoE Sep 2025 – Oct 2025
University College London

- Constructed a full FcCCD to optimise fermentation conditions and modelled responses using quadratic response surface models with interaction and curvature terms.
- Used JMP to analyse ANOVA, LogWorth, residual diagnostics, and evaluated model adequacy across all responses.
- Applied multivariate optimisation through desirability functions to identify robust operating windows and provided mechanistic interpretation relevant to fermentation scale-up.

Perfusion-based mAb Bioprocess Design — Team Member Sep 2024 – Dec 2024
University College London

- Designed an integrated bioprocess architecture for a TNF-α monoclonal antibody biosimilar
- Developed a mathematical model to evaluate a perfusion-based production strategy
- Proposed buffer and solvent recycling schemes, reducing buffer usage by up to 80% and solvent waste by 50%
- Integrated sustainability measures including buffer reuse (60%) and CO_2 off-gas capture (˜30% reduction)

Technical Skills

Computational	**Experimental**	**Language & Documentation**
Python, MATLAB	ÄKTA chromatography	English (Fluent), German (Basic)
JMP, Machine learning	TFF / UF–DF	GMP awareness, Technical reporting
Data analysis & visualisation, TEA / LCA modelling	SDS-PAGE, Western blot, Quantitative enzymatic assay	LaTeX, eLN, SOP drafting, QC documentation