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Exploring novel ways to drive customer and merchant benefits through huge-scale transaction data

EPSRC theme	Information and Communication Technologies
Principal supervisor name	He Ye
Principal supervisor UCL profile website	https://profiles.ucl.ac.uk/102291-he-ye
Host faculty and host department	Engineering Sciences Computer Science
Lead department website	https://www.ucl.ac.uk/engineering/computer-science
Department PGR administration email	cs.researchdegrees@ucl.ac.uk; cs.phdadmissions@ucl.ac.uk
Standard or collaborative project	Collaborative project
Restrictions for candidates applying	Home and International fees candidates may apply
Partner name	Barclaycard Payments
Additional partner stipend enhancement (per year)	£2,400

Project summary

Why this research is important
Modern financial systems operate at a staggering scale, requiring software and data infrastructures that can adapt, scale, and secure themselves in real time. This project sits at the vanguard of financial technology, tackling two major frontiers: building the future of automated, self-governing software engineering lifecycles (AI-SE) and unlocking novel insights from massive-scale transaction data. The research addresses critical challenges in responsible AI deployment, automated compliance, and generating both scientific breakthroughs and practical value for millions of consumers and merchants.

Who you will be working with
You will be embedded within a world-class, collaborative ecosystem joining University College London (UCL) and Barclaycard Payments. You'll work alongside leading academic researchers in computer science and AI at UCL while collaborating directly with Barclaycards' enterprise engineering and data science teams. This partnership provides a unique bridge between theoretical academic rigour and the real-world operational scale of a global financial institution, supporting the broader mission of building a better financial future.

What you will be doing
Your research will explore cutting-edge methodologies at the intersection of AI and large-scale systems. Depending on your specific focus within the partnership, you will:
- Design and iterate on AI-assisted Software Development Lifecycles (AIDLC) and novel "always-on" governance frameworks.
- Investigate advanced machine learning techniques to drive consumer and merchant benefits using massive-scale

transaction data and distributed systems.
- Publish high-impact research, contribute to open standards, and collaborate with industry practitioners to deploy scalable, secure, and responsible AI solutions.

Who we are looking for
- We are seeking highly motivated PhD candidates with a background in computer science, machine learning, software engineering, or data science. The ideal applicant will possess:
- A strong academic track record (undergraduate or Master's degree) in a quantitative or computational discipline.
- Curiosity about large-scale systems, automated software engineering, or privacy-preserving data analytics.