James Clarke

PhD Candidate, University of Surrey

j.m.clarke@surrey.ac.uk
jamesmclarke.co.uk
JamesMClarke

Research Interests

Usable Security I am interested in investigating approaches to enhance the security of systems and information while prioritising a user-centric design. My research aims to make security more accessible and intuitive for end-users.

Digital Accessibility My research investigates creating inclusive digital environments for people with diverse abilities, concentrating on eliminating barriers and improving usability. Currently, I am specifically investigating issues experienced by users with visual impairments.

Security and Privacy My research investigates Security and Privacy in various environments. I am currently working on multiple projects looking at privacy and security online, on desktop computers, on mobile, and with IoT devices.

Education and Career

2022–present **PhD Computer Science**, *University of Surrey and Durham University*
My research investigates the security and privacy of assistive technologies, such as screen readers and browser extensions, for people with visual impairments. This research aims to shed light on the potential vulnerabilities and privacy concerns associated with these assistive technologies, recognising their critical role in enhancing digital accessibility for individuals with visual impairments. The ultimate deliverable of this project is a privacy-enhancing and human-centric platform that protects visually impaired users against various attack vectors in different environments (i.e. web browsing, screen readers and connected devices).

2025–present **Post Graduate Certificate in Learning and Teaching in Higher Education**, *University of Surrey*
I am currently undertaking this qualification, which encompasses three themes: Professional Development, Different Voices, and Reflective Practice. Successful completion of this course will result in the award of a Postgraduate Certificate in Learning and Teaching in Higher Education, as well as an Associate Fellowship of the Higher Education Academy (now Advanced HE).

2021–2022 **MSc Cyber Security**, *Newcastle University*, *Distinction*
This MSc focused on a wide range of computer science fields, including Security & Reliance, Dependable Systems, Cybercrime and Cloud Computing. My dissertation investigated Visual Impairments and Privacy-Enhancing Technologies.

2017–2020 **BSc (Hons) Computer Science**, *York St John University*, First Class
During this degree I studied programming, maths, databases, networking, HCI, mobile application development, IoT and cyber security. My dissertation was based on invasive advertising, tracking, and online privacy.

2019 **Research Assistant**, *York St John University*
During the second year of my undergraduate degree, I was allowed to hone my research skills when working as a research assistant for Dr David Zendle during his time at York St John University. This opportunity afforded me a greater insight into the process of research and academic inquiry. Through this, I developed a positive relationship with my supervisor, which gave me experience in working alongside academics. This rapport also further developed my enthusiasm for the subject and challenged me to rethink my own online presence.

2010–2017 **A-Levels and GCSEs**, *Whitburn Church of England Academy*
A-Levels: Computer Science, Art and Physics. GCSEs: 11, including Mathematics, English and Science.

Publications

2024 **Invisible, Unreadable, and Inaudible Cookie Notices: An Evaluation of Cookie Notices for Users with Visual Impairments**, *James M Clarke, Maryam Mehrnezhad, Ehsan Toreini*, *ACM Transactions on Accessible Computing*. This study explores the accessibility of cookie notices on leading UK websites for users with visual impairments. This analysed 46 websites through system studies and a user study with 100 participants, the research uses various methods, including accessibility testing tools and screen readers. The results reveal that a majority of the examined websites' cookie notices present accessibility challenges, such as contrast issues and delayed reading aloud. The study discusses the implications on user experience and privacy, offering recommendations for stakeholders to improve website accessibility and privacy practices for users with visual impairments. The user study highlights negative perceptions of cookie notices among individuals with visual impairments, supporting the idea that implementing the recommendations could enhance their online experience. Additionally, a disparity is identified between users' preferences in responding to cookie notices and their actual behaviour.

Under Review **AXECC: Differential Web Tracking and Accessibility in Browser Extensions**. *James M Clarke, Ehsan Toreini, Maryam Mehrnezhad*. Browser extensions are commonly used to improve the browsing experience and accessibility. However, installing extensions naturally increases the user's risk. This work presents AXECC, a novel framework to measure differential web tracking and accessibility risks. We utilise the AXECC framework to analyse the web tracking and accessibility impact in the wild on 21k real-world extensions collected from the Chrome Web Store. In our analysis, we identify that 15.77% of extensions (with more than 540M installs) perform a type of third–party tracking in the first 60 seconds after loading. These results are highly correlated with the extension category, highlighting the differential risks. Furthermore, we find that a small number of extensions (with 63M installs) alter the accessibility of a webpage when browsing, and these alterations are often complex and involve more tracking.

Teaching and Demonstrating

2023–present **Demonstrator**, *University of Surrey*

Alongside my PhD at the University of Surrey, I have served as a demonstrator for various modules including Secure Systems and Applications, Advanced Challenges in Web Technologies, Information Security Management modules, Privacy Enhancing Technologies, and Ethical Hacking. During these roles, I have worked both independently and as part of a team to support students learning in classes of up to 200 students. Additionally, I have worked to update and refine lab materials for a number of these modules.

2024-present **Invited Lecture**, *Royal Holloway, University of London*

I was given the opportunity to deliver an invited lecture for the module Human Aspects of Information Security and Privacy at Royal Holloway, University of London. For this lecture, I created original material based on one of my papers and delivered it over the course of two and a half hours. Moving into 2025, I have again been invited to present a guest lecture.

2021–2022 **Technical Officer**, *Newcastle University Cyber Society*

I created, delivered and supported technical sessions for the Newcastle University Cyber Society. I also led some sessions, including investigating breaking the Enigma cypher and giving a detailed breakdown of the OWASP Top Ten. I also helped run and manage social events.

2018 **Tutor**

During the first year of my degree, I tutored a fellow student. I worked to help him gain a deeper understanding of programming and the theorem behind it. This involved me putting together short theory lessons and practical programming tasks, which we then worked through together. I found it really rewarding seeing him become more confident in programming.

Awards

2024 **Poster Competition Finalist**, *Computer Science Research Center, University of Surrey*

I was honoured to be one of the top 8 finalists for my department's post-graduate researcher poster competition.

2024 **Departmental Funding**, *Computer Science Research Center, University of Surrey*

I received funding from my department to present my work at the Privacy Enhancing Technologies Symposium.

2023 **Scholarship**, *FOSAD Summer School*

I received a scholarship to attend the International School on Foundations of Security Analysis and Design (FOSAD). As part of this, I presented my work on the Evaluation of Cookie Notices for Users with Visual Impairments.

Academic Commitments

2024-present **Collaboration**, *NV-Access*

As part of my research I am working with NV-Access, the makers of the leading desktop screen reader, to improve their security footing and create a roadmap surrounding this. This is part of ongoing work examining the security and privacy of various screen readers.

2023–present **Reviewer**

I have acted as a reviewer and sub-reviewer for a number of academic venues. Including the International Journal of Human-Computer Interaction (Taylor and Francis), STAST'23 (Socio-Technical Aspects in Security Affiliated with the 8th IEEE European Symposium on Security and Privacy), and PLOS ONE.

2023–2024 **Presenter**, *Various*

During the first CyberMi2 event, I presented my research on the accessibility of cookie notices for users with visual impairments. Then, during the second CyberMi2 event, I gave an overview of my PhD work at that time. In addition, I presented my paper "Invisible, Unreadable, and Inaudible Cookie Notices: An Evaluation of Cookie Notices for Users with Visual Impairments" at ASSETS 2024.

2024 **Poster Presentation**, *Privacy Enhancing Technologies Symposium*

I was invited by the PETS chairs to submit a poster. This led to creating and presenting a poster summarising my PhD journey so far.

2024 **Supporting MSc Project Supervison**, *Royal Holloway, University of London*

I worked alongside a member of staff at Royal Holloway, University of London, I supported work on an MSc project looking at the security and privacy of existing add-ons for the NVDA screen reader.

Other Experience

2018–2022 **Team Coach**, *Next plc.*

After beginning as a sales assistant in York, I quickly advanced to the roles of Team Coach and Sales Consultant within a year; I then continued these responsibilities in South Tyneside. In my capacity as a Team Coach, I used my leadership skills to foster team dynamics and provided guidance and support while adapting to the fast-paced work environment.