

Security Lab, HP Labs, Bristol, England, UK

Computer Systems Security Research Intern



We are looking for Researchers and Engineers to join a 6-month internship with the team based in Bristol that is researching the future of security technologies and techniques to make computing devices and data more secure for users and enterprises alike.

This internship is an exciting opportunity to participate in world-class research, to experience how industrial research is conducted to deliver customer value, and of course to do it all within the collaborative culture at HP. As a company HP is dedicated to attracting diverse talent from all backgrounds and ethnicity.

During your internship, you will work in the research team exploring novel hardware and software architectures designed to improve cyber-resiliency of the next generation of computer systems. Areas of interest include isolation, intrusion detection and threat mitigation mechanisms rooted in robust hardware components. Practically, the work includes low-level system software (such as hypervisor, OS kernel, and embedded RTOS components) and hardware such as Intel & ARM CPUs along with APUs, MCUs and FPGAs.

Security of computing devices such as PCs, laptops and printers, is an important topic for HP, and HP Labs has a long history of driving innovation in this area through the use of hardware, firmware & system software based solutions. Examples of our work in this space includes [using monitoring techniques to protect low level firmware](#) and [strengthening the security of the Linux kernel](#).

Join us in our new office in the heart of the bustling Bristol city centre, within walking distance from the old town cafes and restaurants, in the middle of the city's thriving startup and academic tech ecosystem. We are looking for curious and creative research-minded individuals who enjoy teamwork, have an excellent grounding in computer science and engineering, theory and practice, and are relentlessly excited to have impact and lead with innovation to solve real world challenges.

Responsibilities

- Develop understanding of state of the art in the relevant areas of research
- Navigate uncertainties in the research while working with the team to identify novel technological paths
- Work with the research team to design a solution which addresses the limitations of the existing approaches, and also be able to progress the research
- Demonstrate feasibility of solution (e.g., paper, prototype, etc.)

Mandatory skills and experience required

- Studying towards a Bachelor's, Master's or Doctoral university degree in the relevant topics
- Knowledge and practical experience in programming (C, C++, Rust, Go)
- Theory and practical experience with computer system architecture
- Excellent written and verbal communication skills
- Keen to learn and able to progress on live projects

For more details, contact:

Jonathan Griffin
Jonathan.griffin@hp.com

or go to [the careers site](#)

or search at jobs.hp.com
(keywords: 'Security Bristol')

Advantageous skills and experience

- Embedded systems, instrumentation, measurement and running experiments
- Signal processing, data analytics
- Low level software and firmware development (OS kernel, hypervisor, compiler)
- Trusted computing, code security and forensics
- Digital integrated circuit design (SoC, FPGA, VHDL, Verilog, synthesis, emulation)
- Applied and theoretical cryptography

About HP

HP is about innovation, it's who we are and what we have been doing since 1939, and we keep reinventing ourselves. Together we challenge convention, pushing each other to engineer experiences that amaze. HP Labs Bristol is our global centre for research in cyber security, located in the vibrant Bristol city centre in the UK. Our industrial research lab is uniquely positioned at the intersection of academic and business-focused research innovation, giving interns the opportunity to contribute innovation that may eventually impact leading products used by millions of people across the globe.

You're out to reimagine and reinvent what's possible—in your career as well as the world around you. So are we. We love taking on tough challenges, disrupting the status quo, and creating what's next. We're in search of talented people who are inspired by big picture progress, keen to learn and grow, and dedicated to making a meaningful difference.

With over 20 years of research in computer and systems security, the HP Security Lab innovates in HP products and solutions, collaborates with academia, and creates and leads industry standards. We are uniquely positioned as an industrial research Lab at the intersection of academic and business-focused research innovation, partnering across the industry for greater impact, and understanding customers' real world problems.

Our history: HP's commitment to diversity, equity and inclusion – it's just who we are. From the boardroom to factory floor, we create a culture where everyone is respected and where people can be themselves, while being a part of something bigger than themselves. We celebrate the notion that you can belong at HP and bring your authentic self to work each and every day. When you do that, you're more innovative and that helps grow our bottom line. Come to HP and thrive!

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Software Security Research Intern



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During your internship, you will work within a team creating new and innovative technologies for securing endpoint devices and infrastructures from the cloud to the edge. The team is a cross disciplinary team researching security and privacy concepts ranging from supply chain security to advanced cryptographic protocols leveraging trusted hardware and firmware co-design. There will be a variety of projects which can be matched to your skill sets, and you will work with researchers and technologists in the business units to design, prototype, and demonstrate the feasibility and value of your work.

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Responsibilities

- Develop understanding of state of the art in the relevant areas of research
- Navigate uncertainties in the research while working with the team to identify novel technological paths
- Work with the research team to design a solution which addresses the limitations of the existing approaches, and also be able to progress the research
- Demonstrate feasibility of solution (e.g., paper, prototype, etc.)

Mandatory skills and experience required

- Studying towards a Bachelor's, Master's or Doctoral university degree in the relevant topics
- Knowledge and practical experience in programming (C, C++, Python, C#, Java)
- Practical experience developing in Linux or Windows
- Excellent written and verbal communication skills
- Keen to learn and able to progress on live projects as part of a team or independently

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Advantageous skills and experience

- DevOps tools (git, CI/CD, Docker, Kubernetes)
- Trusted computing (Trusted Platform Modules), digital signatures, and public key infrastructures
- Cryptography and practical experience of cryptography libraries
- Knowledge of blockchain concepts

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Cryptography Intern



We are looking for Cryptographers and Engineers to join a 6-month internship with HP's cryptography engineering strategy team, based in Bristol with the company's Security Lab that researches the future of security technologies and techniques to make computing devices and data more secure for users and enterprises.

This internship is an exciting opportunity to apply your cryptographic expertise to the development of cutting-edge products, to contribute to HP strategy and increase the effectiveness of cryptographic engineering, and to do it all within the collaborative culture at HP. As a company and cryptography team we are dedicated to attracting diverse talent from all backgrounds. Please speak to us to find out more.

The successful candidate would work with HP cryptographers to ensure the secure deployment of cryptography, advising on product design and choice of cryptographic primitives, and prototyping and investigating the use of new cryptographic capabilities. The team's responsibility extends across HP, creating opportunities for the candidate to work with a wide range of technologists and have influence in varied fields, from new security and privacy paradigms to massive public key infrastructures and constrained processing environments. The successful candidate will have the opportunity to scale the team's reach by contributing to decisions, guidance, tools and training that empower engineers across the company to build products with world-leading security.

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Responsibilities

During the internship you will be given a project to explore approaches, designs or techniques to achieve outcomes. The specific project will be defined with your interests and skillsets in mind. You will receive supervision, help, advice and direction from members of the cryptography team and have access to the support of a broad range of security experts from the HP Security Lab. You will be expected to learn about new areas associated with the project, to work with the team and also independently as required, and to discuss your approaches and results with the team. During the internship you will be expected to write up your work and present the work to the team and the rest of the Security Lab.

Mandatory skills and experience required

- Studying towards a Bachelor's, Master's or Doctoral university degree in a topic relevant to cryptography
- Expertise in theoretical or applied cryptography
- Excellent written and verbal communication skills
- Keen to learn and able to progress on live projects as part of a team or independently

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Advantageous skills and experience

- Practical experience of cryptographic libraries
- Familiarity with cryptographic protocols
- Awareness of system security analysis concepts
- Ability to be innovative in the area of cryptography or its application

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