Secondment Opportunities through BITE

Apply Now

We invite applications from researchers to undertake a secondment in industry for a period ranging between 3 and 6 months to gain commercial experience and mentoring in business, management and entrepreneurship. These secondments are funded through the Breakthrough Information Technology Exchange (BITE) scheme.

Details regarding current secondment opportunities are listed below.

Please note that this scheme is open to current UCL PhD/EngD students, current UCL PostDoc researchers and PhD/EngD graduates who have graduated from within the last 12 months. Undergraduate students, Master’s students and non-UCL researchers are not eligible to apply.

How to Apply

Applicants who have a company in mind that they wish to work with should complete the Industry Exchange Award Scheme form and submit this, along with their CV to biteimpact@ee.ucl.ac.uk. Informal enquiries should be directed to Ryan Grammenos (r.grammenos@ucl.ac.uk). We will aim to match researchers to the most relevant company.

Deadline

There is no deadline for applications. The BITE board will make decisions on a rolling basis as applications are received.
BITE001 – Software Developer for NFC/RFID applications

Company: GoSense Wireless

Objectives:

Assist in the adaptation and development of an existing PC-based software GUI that programmes GoSense Wireless nodes:

- To interface with different 3rd party RFID reader hardware,
- Into two broad versions; one simpler version for end-users, one featured version for developers.

Assist in the design and development of a near field communication (NFC) application for Android (Smartphones and tablets) that broadly replicates the functions of the PC-based GUI, that can:

- Read from, and write to, GoSense Wireless sensor nodes,
- Interface with and upload data to a cloud-based database.

Key Stages:

To help specify an architecture for a cloud-based database capable of managing and storing sensor data coming from either RFID or NFC readers:

- Familiarisation with GoSense Wireless NFC/RFID-enabled sensor nodes,
- Familiarisation with ISO15693 commands and Android NFCv 15693,
- Familiarisation with the pre-existing PC-based GUI, DLLs, and USB-based RFID reader system,
- Assist in defining features and functions of the new PC-GUI and Android applications,
- Work on a high-level architecture and simple project plan for restructuring of the PC GUI,
- Work on a high-level architecture and simple project plan for developing the Android app,
- Work on a high-level architecture and identify providers for hosting the cloud database,
- Functional coding, development and debugging of the above software systems.

As part of GoSense Wireless’s technical development team, you will:

1) Design, develop and support an Android app for mobile near field communications (NFC) using the Android NFCv/15693 API.
2) Develop the app to support communications with GoSense Wireless NFCv/RFID smart tags.
3) Improve and support PC-based software for use with third-party radiofrequency identification (RFID) readers to support communications with GoSense Wireless NFCv/RFID tags.
4) Work on both front end and back end software development.
5) Provide Android NFCv API support to GoSense Wireless’s development team.
BITE002 – Transport Data Analyst

Company: TravelAI

TravelAI’s core IP is an automatic transport detection algorithm that runs natively on Smartphones. It offers transport-usage data that is more timely and detailed and from a significantly larger sample group than that of traditional methods.

Objectives:

This next-generation data calls for new methods of analysis and visualisations and so the objectives for the secondment include:

- Identifying insights that can be drawn from the data
- Helping discover commercial applications for the data
- Exploring techniques to enhance the dataset (e.g. by smoothing out demographic biases)
- Research the market for transport data

The secondment will also involve supporting the company’s business objectives, including:

- Represent the company’s expertise alongside the rest of the team at investment events and business development meetings.
- Contribute to the identification and feasibility assessment of new business opportunities.

Being a small company, we thrive by bending to the skills of our team members, and so numerous opportunities to contribute will doubtless present themselves (graphic design, video production, data analysis & visualisation) as we get to know one another.

Key Stages:

- Familiarisation with the existing dataset.
- Application of established techniques to enhance and clean the data.
- Engage transport industry to identify requirements.
- Develop data analyses and visualisations.
BITE003 – Android Developer

Company: TravelAI

TravelAI’s core IP is an automatic transport detection algorithm that runs natively on Smartphones. It makes careful use of the phone’s sensors to reveal how the user is travelling.

Objectives:

The secondment will involve Android development including:

- Conceive, research, test and develop new ideas to refine the transport-detection algorithms.
- Enhance the existing codebase with the latest best practices.
- Optimise existing codebase to minimise battery and CPU requirements.
- Develop user interfaces for both consumer and business facing apps as required.
- Maintain documentation.

The secondment will also involve supporting the company’s business objectives, including:

- Represent the company’s technical expertise alongside the rest of the team at investment events and business development meetings.
- Contribute to the identification and feasibility assessment of new business opportunities.

Being a small company, we thrive by bending to the skills of our team members, and so numerous opportunities to contribute will doubtless present themselves (graphic design, video production, data analysis & visualisation) as we get to know one another.

Key Stages:

- Familiarisation with the existing codebase and build environment.
- Refresh codebase with latest best practices.
- Data visualisation and analysis.
- Develop UIs.
- Dive into the transport-detection algorithms.
BITE004 – Developer in Augmented Reality

Company: FiarFly

Objectives:

The main objective of this project is to develop a prototype head mounted augmented reality system. The aim is to demonstrate a technical Minimal Viable Product for enhancing sports fans experience in the stadium.

Key Stages:

- WP 1: Real time image processing and sensor integration
  Develop / customize real time image processing and feature detection algorithms for sports pitches. Integrate GPS/accelerometer/gyro.
- WP 2: Wearable device customization
- WP 3: Graphics / animation
  Create graphics / animations to demonstrate the benefits of augmented reality. Using unity 3D (we will strongly support this activity).
- WP 4: Business Support
  Apply lean start up methodologies to prototype development. Support writing of business plan/grant applications, identify and explore future collaborative opportunities.

The researcher will be a part of the team working on real-time augmented reality in challenging environments. Specifically, you will be working on working on augmented reality for head mounted displays.
BITE005 – Teaching Materials Developer in Embedded Systems

Company: Imagination Technologies

This role will appeal to Doctorate Students/Post-Docs who really enjoy Teaching and facilitating Student Projects. Those on Advanced Teaching Methods Scholarships are particularly well placed.

The ideal candidate has probably developed new course materials and lab exercises, and has given classes on Embedded Systems. They get satisfaction seeing Students’ grasp a genuine understanding through hands-on experience. They may have already written a textbook, or may be thinking about doing so. They want to be remembered as the teacher who inspired a class to “go do”.

This project is about Teaching Microcontrollers (“MCUs”): 32bit MCUs based on the MIPS architecture, and made by Microchip under the brand name “PIC32MZ”.

The likely hardware platform will be a “ChipKit” made by Digilent, and the software toolchain will be Imagination’s forthcoming “Codescape” and Microchip’s own MPLab.

The project involves creating a full semester course on 32 bit MCUs, with an Internet of Things theme behind the practical labs. Imagination’s “FlowCloud” technology and its link to the cloud will be very useful in the later exercises.

The target audience are 2nd or 3rd semester under-grads in Electronics, Mechatronics and Computer Engineering. Possibly also some Computer Science under-grads who choose Embedded Systems as their specialisation.

Topics that are likely to be included:

- MCUs: key blocks, how they work, where they are used, market overview
- Why 32 bit? Contrast with 8051
- Different architectures: MIPS, ARM, DSP
- Programming: assembler vs C, and abstracted languages such as Arduino
- Setting-up hardware and software
- Programming exercises
- Code Optimisation
- Internet Connectivity
- FlowCloud: concepts (sensors, nodes, hubs, cloud, APPs, Big Data, Data Analytics), how to use
- Optional: running Linux

The output is likely to be a set of Lecture Slides, a Lecturer’s Handbook, Student Lab Manual, Lab Exercises & Tests, and Test Solutions. Probably 12 to 15 Lectures and associated Labs. These materials will be distributed free-of-charge to Educators by Imagination, and they will be translated into several languages. The Author will achieve significant recognition, and there will be the opportunity to run “Train the Trainer” Workshops and present this work at Academic events. A number of Introductory Videos will be given by the developer for featuring on the Imagination University Programme website. These activities could easily lead to a textbook and to follow-on materials.

Strong support will be given from Imagination’s team at Kings Langley (Hertfordshire), under the guidance of WW University Programme Manager, Robert Owen, who has twenty years’ experience of commissioning teaching materials.
BITE006 – Internet of Things Smartphone App Developer

Company: ARM

The concept of Internet-of-Things (IoT) is becoming a reality as connected embedded chips have become cheaper, smaller, low-power and low-cost, enough to warrant large scale integration of these in every “thing” around us.

The combination with considerable computation power and connectivity through various low power protocols is enabling objects of all sizes and purposes to be connected to the internet, hence endowing them with potential “intelligence”. The applications of such connected intelligent world are unimaginable! E-health, smart homes, and wearable intelligence are just a few examples.

One of the key enabling technologies for IoT is the mobile smartphone which offers connected “things” a gateway to the internet. Appcessory programming, or the programming of smartphone Apps that connect to accessories or “things” is a key ingredient of the IoT eco-system. However, the range of technologies and skills involved is making the development cost too high for the average developer.

Objectives:

In light of the above, the aim of this project is to develop an Application Programming Interface (API) that makes it easier for developers to build smartphone Apps for Internet-of-Things (IoT) applications.

Building on the ARM® University Program’s IoT Appcessory Lab-in-a-Box, to be officially launched in October 2014, the proposed API will allow developers to build real world IoT applications quickly and conveniently. We hope this will help unleash the huge potential of IoT in our daily lives.

Key Stages:

- D1. App GUI development on Android OS
- D2. WiFi connectivity utilities on Android OS
- D3. Bluetooth/Bluetooth Smart connectivity utilities on Android OS
- D4. Localization utilities using GPS on Android OS
- D5. Localization utilities using WiFi on Android OS
- D6. Embedded system connectivity utilities using Arduino and/or mbed platforms on Android OS
- D7. Develop an iOS version for the above App

Both iPhone and Android smartphones will be targeted. Android SDK and Apple XCode will be used to develop Apps for Android and Apple phones, respectively.

The proposed API will include the following capabilities:

- Flexible Graphical User Interface (GUI)
- WiFi and Bluetooth / Bluetooth Low Energy connectivity utilities
- Localization utilities using GPS and WiFi
- Embedded systems connectivity utilities using the Arduino and/or mbed platforms

It’s expected that the relevant candidate will spend one day a week during their tenure participating in appropriate commercial / customer facing activities associated with the ARM University Programme. These activities have been selected to provide the candidate with experience in:

- End-user marketing
- Social Media campaigns
- Customer facing presentations / interactions
- Commercial fulfillment activities
- Customer management activities
BITE007 – Software Developer for Embedded Systems Labs

Company: ARM

Student grading (or assessment) is a crucial part of academic life. It is also the most time consuming and somewhat onerous task for educators. Hence, automating this task can bring a lot of benefits:

- Reduce stressful tasks and free up educators’ time to provide high value-add feedback and adaptive customized tuition to students.
- Widen access as many more students can avail of educational services.
- More objective and reliable marking, leading to higher quality education outcomes.
- Reduces the cost of education per student through quick feedback and wider access.

Objectives:

In light of the above, the aim of this project is to design and implement a reconfigurable automatic grader for embedded system labs. The grader could be used in both simulation and real hardware modes. It will be also be easily reconfigured to work on multiple low cost embedded system platforms.

Building on the ARM® University Program’s Lab-in-a-Box series for embedded systems, the resulting grader will be tested and deployed in real world classes and labs worldwide.

Key Stages:

- D1. Getting started with embedded system design LiB and development software tools
- D2. Prototype of a GUI-based grader (software emulation, no interaction with Keil or hardware)
- D3. Prototype of Keil MDK based grader
- D4. Final Keil based grader (for all labs of embedded system LiB)
- D5. Prototype of hardware-based grader
- D6. Final hardware-based grader (for all labs of embedded system LiB)
- D7. Final packaging of the above deliverables

It’s expected that the relevant candidate will spend 1 day a week during their tenure participating in appropriate commercial / customer facing activities associated with the ARM University Programme. These activities have been selected to provide the candidate with experience in:

- End-user marketing
- Social Media campaigns
- Customer facing presentations / interactions
- Commercial fulfillment activities
- Customer management activities
BITE008 – Programmer

Company: IBM (secondments are based in the US)

Have you ever considered gaining industry experience by working in Silicon Valley on advanced technology projects that are paving the way for next-generation computing…and could change the world? If you have, we're looking for you!

IBM has asked us to search for a number of motivated students to bring to San Jose, California to work for 8-12 months on IBM’s famous “Watson Project”. (You may have heard of Watson from its appearance on “Jeopardy”.)

Watson is a high profile, corporate level technology initiative in IBM involving the efforts of many IBM teams in multiple locations collaborating around the globe. Combining elements of Cognitive Computing, Cloud and Big Data Analytics, IBM is partnering with many companies to explore the application of the Watson next-generation approach to computing to various vertical market opportunities, such as Healthcare, Finance, and Accelerated Research.

Qualifications:

- You must be currently enrolled in a Computer Science/Computer Engineering degree program with heavy emphasis on software development in Java and related toolkits. Undergraduates (Y3/Junior) and Graduate students will be considered.
- Almost-graduated final year students (BS/MS) are also eligible for consideration.
- There are some PhD research and research support opportunities as well.
- Additional background experience/coursework in BioInformatics, BioChemistry, Chemistry will really help your prospects, as will experience in data mining, databases, text analytics, machine learning, image processing.

BITE008a – Programmer, Algorithms

- Must Have: Skilled in programming, Proficient in Java
- Must Have: Academic background and interest in Data Structures, Algorithms
- Highly Desirable: Experience with Data Mining (Familiar with statistical packages for clustering, classification and text mining), Data Analysis, Data Visualization, Relational Databases (SQL, PL*SQL)
- Nice to Have: Background in Machine Learning, Analytics, Hadoop, etc.

BITE008b – Programmer, User Interface

- Must Have: Skilled in programming, Proficient in Java
- Must Have: Experience and interest in UI design/implementation, Javascript, HTML, XML, and web technology
- Nice to Have: Background in JSP, REST Services, etc.