Title: Indoor localisation via passive WiFi backscatter sensing  
(supported by Toshiba TRL)

Type of award: PhD Research Studentship

Department: Electrical and Electronic Engineering

Details: £16,000 p.a. (subject to confirmation) and eligibility criteria. The stipend will rise by £500 p.a. in years 2-4. A generous allowance for conference travel is also provided.

Duration: 4 years

Eligibility: Home/EU applicants

Start Date: As soon as possible

PhD Topic Background/Description

An EPSRC Industrial CASE award PhD studentship is available at the University of Bristol in collaboration with Toshiba TRL.

Accurate indoor localisation is a rich source of information for understanding human behaviour. Video depth cameras and wearable technologies can provide high levels of accuracy and represent the state-of-the-art in indoor localisation. Wearable technologies (such as wristbands) tend to have limited battery life and have a high risk of non-compliance; commercial solutions based on UWB (Time of Arrival - ToA) can offer very accurate positioning, but with power consumption, the battery life of the wearable tag is several hours (too short for long term localisation applications).

This project focuses instead on a next generation of localisation, which exploits ambient Radio Frequency (RF) signals through passive radar technology. RF signals such as those arising from Wi-Fi transmissions typically cover entire households. The reflections of these signals from people provide a rich source that can be used to determine localisation information (and also in some cases physical activity information), without requiring a wearable device and with much lower perceived intrusion.

To address the main challenge of resolution and interference, the project will look to significantly increase the measurement accuracy and inference in both range and bearing by developing new machine learning and radar signal processing techniques.

Further Particulars

Doing research at the University of Bristol

The quality of research at the University of Bristol places it within the top five Universities in the UK based on the Research Excellence Framework and Times higher Education rankings 2014-15. The PhD candidate will be a part of a friendly and diverse community, with the Bristol Doctoral College (BDC) as the focal point for students across the University.
central coordinating facility. Alongside the specialist training the candidate will receive in PhD-specific
topics, the BDC offers approximately 200 courses, interactive workshops and seminars as a part of the
University’s Personal and Professional Development Programme for PGR students. The BDC organises
University-wide events and provides a hub of information, guidance and resources to help researchers to
get the most of their time at Bristol.

**Candidate Requirements**
We are looking for an enthusiastic student with a minimum 2:1 honours degree, or equivalent in
Electrical and Electronic Engineering, Computer Science.

**Scholarship Details**
Scholarship covers full UK/EU (EU applicants who have been resident in the UK for 3 years prior to
application) PhD tuition fees and a tax-free stipend at the current RCUK rate plus an industrial top-up to
give an initial amount of £16,000 p.a. EU nationals resident in the EU may also apply but will only
qualify for PhD tuition fees.

**Informal enquiries**
For informal enquiries please email Dr Robert Piechocki r.j.piechocki@bristol.ac.uk

For general enquiries, please email sceem-pgr@bristol.ac.uk

**Application Details**
To apply for this studentship, submit a PhD application to the Department of Electrical and Electronic
Engineering using our [online application system](http://www.bristol.ac.uk/pg-howtoapply)

Please ensure that in the Funding section you tick “I would like to be considered for a funding award”
and specify the title of the scholarship in the “other” box below with the name of the supervisor Dr
Robert Piechocki.

*Apply now*