# HABITS Masters Scholarships in IT

The HABITS (Health Advances through Behavioural Information Technology Systems) Masters Scholarships in IT are now open for application.

**Graduate Student Opportunities**

Tēnā koe, Malo e lelei, Talofa lava, Kia orana, Fakatalofa atu, Bula!

• The University of Auckland is looking for talented and enthusiastic individuals to undertake Masters thesis research in Computer Science.

• Research opportunities will support the co-design, implementation and evaluation of digital interventions for common mental health challenges in adolescence.

• We have two stipends for appropriately qualified students to commence research in 2018. Funding is through MBIE as part of one of 11 National Science Challenges: *E Tipu e Rea* – A Better Start.

**Digital interventions and youth mental health**
Mental health problems are common in adolescence, affecting at least one in four young people. They are a major cause of disability, and a major risk factor for youth suicide. Yet most mental health problems are untreated. Māori and Pacific people are at particular risk for mental health problems and have some of the poorest access rates to services.

Digital technologies are reshaping the ways we live our lives, including healthcare technologies. Digital media can be harnessed in innovative ways to deliver services to those that would otherwise miss out. We have an opportunity to develop relevant and culturally appropriate interventions to improve mental wellbeing of New Zealand adolescents using online and smart phone technologies.

**A Better Start - E Tipu e Rea (http://www.abetterstart.nz)**
We are part of a National Science Challenge funded by the Ministry of Business, Innovation and Employment. Professor Sally Merry (Chair in Child and Adolescent Psychiatry) is the Principal Investigator and we have a large team of scientists and advisors involved in the project, who represent health and education disciplines throughout New Zealand.

Our aim is to increase detection and access to evidence based interventions by partnering with Māori and Pacific young people and their communities to facilitate a co-design approach to develop and test a digital platform of e-health interventions. The platform will consist of e-screening and effective e-health interventions using Behavioural Intervention Technologies (BITs) for common mental health concerns: emotional health (depression, anxiety and stress) and problematic substance use. We hope, through co-funding, to expand the number of interventions to address other relevant areas of emotional health and resilience e.g. bullying, sleep disorders, social phobia, post- traumatic stress disorder and others.

**Research opportunities for graduate students**
Work on the HABITS IT platform began in late 2016 and has progressed to a first field trial of a mobile e-therapy suite for youth wellness and initial integration of an e-screening tool. IT thesis topics of interest to complement and support this work in 2018 include:

- Exploring the role and potential of an API gateway (e.g. Kong) for the HABITS platform. Kong is extensible – thus possible research could look at developing novel plugins for handling attributes like security, scalability and availability in the HABITS context.
- Developing an API to allow diverse apps to post data to the HABITS platform. The current HABITS implementation uses RESTful Web Services for identity management and exchange of app usage and self-assessment data based on current requirements. A design method is needed for developing a consistent and extensible API based on the needs of a range of potential API consumers. The research could also pursue development of associated tool support, e.g. code generation and API testing.
- Investigation and development of a Microservices architecture for the HABITs platform. Microservices is a new topic in SOA that's receiving attention. The research would start by reviewing and understanding what is meant by microservices, and then looking into its applicability for the HABITS platform. Possible

directions the research could take include developing methods to help migrate a conventional architecture to a microservices-based architecture, tools to aid with the development of a microservices architecture, or evaluating the pros and cons of microservices architectures with conventional architectures.

- Agent / chat based technology for e-therapy delivery. Chat is now a ubiquitous interaction approach, and is increasingly being a basis of human-to-agent interactions along with human-to-human communication. Research is needed to understand the best architecture to deliver HABITS services effectively into platforms / formats such as SMS and Facebook. A related research topic concerns natural language processing and AI to interpret and respond to user input in intelligent ways that emulate a trained therapist or otherwise complement interaction with human therapists or more traditional (often gamified) e-therapy apps.

To further discuss thesis topic details contact Prof Jim Warren (jim@cs.auckland.ac.nz) or Assoc Prof Ewan Tempero (e.tempero@auckland.ac.nz).


**The ideal applicant**
You will have a background in Computer Science, Software Engineering or a related area at the honours level. It's an added advantage if you have education or experience in any of: psychology, health informatics, human-computer interaction or game design, or any area of health service delivery (social work, counselling, nursing etc.).


**About the stipends**
• $13,000 stipend for living costs for one year.
• Stipends are tax free.
• Stipends cover University tuition fees for domestic students.


**Project supervision**
Project supervision will be from the Department of Computer Science with additional advisory input from the Department of Psychological Medicine.


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| **Contact** | Dr. Sarah Hopkins (Programme Manager) |
| **Email:** | s.hopkins@auckland.ac.nz |
| **You might be asked to provide:** | Your updated CV, a letter describing your relevant background and experience (including any evidence of experience working with Māori and Pacific communities) and your preferred topic(s) for masters thesis research, a copy of your academic transcript and academic references (please upload as a single PDF document).<br><br>A writing sample (dissertation, project report or publication). |