

ADAPT Undergraduate Internship Programme 2017

PROJECT DESCRIPTION

Institution/Team:	ADAPT-Insight NLP
Project Title:	Building Earth Sensory Systems from Online Information
Suitable for students who are studying in the following areas:	Computer Science, Natural Language Processing, Information Retrieval, Signal processing
Skills needed:	Programming using one of the main languages used in natural language processing (NLP), i.e. Java (preferred), Python, and C++.
Project Description:	<p>Sensory systems on a massive scale to monitor regional, continental, and/or global events are crucial infrastructures for us to better assess our environments and make necessary responses to the events that have great impacts on humans. Examples of traditional sensory systems include Tsunami Warning Systems, Plate Boundary Observatory in Taiwan and Earthquake Early Warning in Japan. The building of these systems is very expensive and requires state and international investments. In this programme the fellow will learn plausible approaches using online information to build sensory systems for Earth.</p> <p>The idea came from the facts that whenever there is a contingency, there are always corresponding posts in the internet, and usually in seconds. We have observed this phenomenon in many events such as earthquake and typhoon strikes, and 2014 Kaohsiung gas explosions in Taiwan. Currently there are efforts taking advantage of motion sensors, microphones and GPS locations, etc., to detect events from mobile devices, challenges arise to integrate multimodal signals for the understanding of each event.</p> <p>The results of this programme will be functional Earth Sensory Systems which can be used to detect events of interests from online information.</p>
The Role of the student & benefits gained from participation in this project: ¹	The fellow will learn to use available online information to build Earth Sensory Systems. Posts by humans will be the main source of event information in this programme because they have been interpreted by humans and therefore are usually more informative than sensor signals can tell us. To take advantage of this information, relevant natural language processing techniques need to be surveyed and developed. In addition to the online information as sensors, the second focus of this programme will be on the perception modelling, which is used to interpret if there is any event and if there is, what type of the event is.
Who will be working with you?	The fellow will be working closely with Chao-Hong Liu, a Postdoctoral Researcher in the group. S/he will also have the support of Prof. Qun Liu, who is the theme leader on natural language processing in the ADAPT Centre.
Short description of the group:	The ADAPT Centre for Digital Content Technology (www.adaptcentre.ie) is a dynamic research centre that combines the world-class expertise of researchers at four universities (Dublin City University, Trinity College Dublin, University College Dublin and Dublin Institute of Technology) with that of its industry partners to produce ground-breaking digital content innovations. ADAPT brings together more than 150 researchers, who collectively have won more than €150m in funding and have a strong track record of bridging research and innovations to more than 140 companies.
Recommended Reading Material:	http://www.annalsofgeophysics.eu/index.php/annals/article/view/5364/5494 http://blog.aylien.com/euro-2016-according-to-twitter-sentiment-analysis/ http://www.envcomp.eu/ https://www.nist.gov/sites/default/files/documents/2016/12/19/loreht17evalplan_v0_0.pdf
Other information:	10-week internship between May-August 2017. Specific dates to be decided based on the availability of the applicants.

¹ This is an initial description of the role of the student and it is liable to change following discussions between the investigators and the student.

<i>For further details on this project please contact:</i>	Name: Phone: E-Mail: Website:	Chao-Hong Liu +353-892473035 chaohong.liu@adaptcentre.ie www.adaptcentre.ie
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