Proposed Project Topics for COMP9323 2021T2

Projects will involve developing and demonstrating software as a service (i.e., messaging bot and/or Web/mobile app and preferably integrating the developed services into platforms that people use to perform work, learning and teaching processes (e.g., teams, slack, WhatsApp, and other). In addition there are projects in 2 specific areas.

Project Area 1 – Project Mentoring Network

The goal of this project is to develop an online software service to support students and mentors (e.g., senior students, professionals in industry and open-source communities) in establishing project mentoring opportunities. The service should support (not limited to): (i) mentor registration and online profiles, (ii) project registration, (iii) student-mentor connection services (e.g., mentor search, seeking mentoring connections, suggest a mentor for a given project, help making connections with mentors), (iv) project video introductions, etc.

Project Area 2 – Students-Mentor Project Online Meeting Management

This project focuses on providing features that are specific to students-mentor meetings (not limited to): (i) booking of regular video meetings among students and mentors (integration with calendar service), (ii) managing regular mentoring meetings including explicit meeting agenda, (iii) note taking (iv) to do tasks and integration with a task management service (e.g., Trello, Asana, Jira and other), (v) meeting recordings. Use COMP9323 as an example to illustrate features in this project.

Project Area 3 – Students Project Online Meeting Management

This project focuses on providing features that are specific to work meetings among students in one project (not limited to): (i) scheduling regular online project meetings (integration with calendar service), (ii) adding and removing meeting agenda items, (iii) adding notes and comments, questions in relation to meetings while they are active (e.g., a meeting can be kept active for a week) (iii) to do tasks and integration with a task management service (e.g., allocation of tasks to project members through services like Trello, Asana, Jira and other), (iv) meeting recordings, (v) providing peer encouragement for contributions and positive attitude, (v) closing meetings (after a given date, the meeting will not be active). Use COMP9323 as an example to illustrate features in this project.

Project Area 4 – Managing Project Proposals

This project focuses on providing features that are specific to managing project proposals from various organisations (research groups, industry, and non-profit partners) to students. Features include (not limited to): (i) course authorities submitting request for project proposals including course outline, project requirements and deadlines, (ii) organisations submitting project proposals including project description and support capabilities (e.g., project requirements, customer reviews, mentors), (iii) project proposal discussion forum (e.g., Q&A, comments on project proposals), (iv) projects

selection for a given course (e.g., selection process by course authorities or voting mechanism in case of large number of proposals), (v) showcasing of select number of projects in the platform (e.g., recorded demos for selected projects which won prizes at the end of course).

Project Area 5 – Remote Work Services

The project focuses on providing features that allow remote workers community to share information and experience related to online tools, e.g., streaming, collaboration, moderation services) (not limited to: (i) curation of questions and answers relevant to online services for remote work (ii) curation of short video tutorials and guides on using remote work services, (iii) discussion and experience sharing, (iii) curation of how-to guides services, based on experiences from worker communities, (iv) connection with experts to discuss issues related to remote work services (e.g., how to use a service, how to handle failures). Projects on this theme can focus on specific categories (e.g., education, research, event organisation).

Project Area 6 – Wellbeing Online Services

Universities, organisations, and various other groups are all voicing emerging challenges in protecting the health, wellbeing of vulnerable populations (e.g., people are losing their jobs, have difficulties to cope with stress, remote work and other situations). While organisations provide services such as counselling and online information, existing solutions are often used in an ad-hoc manner with little or no customisable support tailored to worker concerns. The goal of this project is to provide an online service that leverages conversational technologies and information curation to help organisations (e.g., universities) to support people (e.g., students, workers) during crisis such as COVID-19 and beyond. The service should provide (not limited to): (i) Q&A to address people concerns, (ii) links to professionals and experts on concern matters, (iii) short videos and guides to provide help, (iv) curation of up-to-date health and wellbeing information from other sources (e.g., experts, health information sources). Projects on this theme can focus on specific categories of people (e.g., students, vulnerable communities).

Project Area 7 – Health and Safety Online Service

Universities, organisations and various other groups are facing increased challenges to handle Health and Safety (H&S) concerns, e.g., in relation to preparation of workplace and protection of students and staff during COVID-19 crisis and beyond. The goal of this project is to combine crowdsourced information curation and conversational digital assistants to develop an online service that provides health and safety support to students and staff. The service should provide (not limited to): (i) curation of relevant and trusted H&S questions and answers, (ii) curation of short videos and training guides to provide H&S support, (iii) links to professionals and experts on H&S. Projects on this theme can focus on specific categories of people (e.g., universities, event organisation, airports).

Project Area 8 – Moderation of online chat discussions

In several online communities (e.g., education, sports, product streaming services), online chat discussions such as comments, Q&A in social media and video platforms can be large, hard to follow and manage (e.g., helping presenter answer to important questions, identity trolling). This project focuses on providing features that are specific to moderation of online discussion forums (not limited to): (i) identification of important questions that require answers, (ii) flagging of undesirable behaviour such as trolling, (iii) rewarding of positive behaviour through peer likes and comments, (iv) identify moderators from participants (e.g., through earning of specific badges based on contributions or expertise). Projects on this theme can focus on specific categories (e.g., streaming of large lectures in large courses, sport events, town hall meetings, political video streaming).

Project Area 9 – Project Online Archive Service

For various reasons, it is desirable to access project archive (e.g., a group member may not be able to attend a meeting in a scheduled time, a project member needs to go back to discussion on specific feature design or just archiving online meetings, archiving student project presentations or demos, marking presentations and demos). The service should provide (not limited to): (i) recording of online project sessions (e.g., meetings, presentations), (ii) transcription of videos (e.g., using voice to text services), (iii) organisation and search of project archive. Projects on this theme can focus on specific categories of project artefacts (e.g., presentations, meetings, demos).

Project Area 10 – Online Project Deliverable reviews

Deliverables in projects may include artefacts such requirement documents, presentations, project reports (e.g., thesis report, research paper, design, code). While these artefacts are in general reviewed by subject experts (e.g., lecturers, designers), it is desirable to scale review process through peer and external reviews (e.g., reviews by end users).
The service should provide (not limited to): (i) recruiting reviewers, (ii) enabling online peer reviews of artefacts (e.g., presentations, project reports), (ii) allowing peers to rank each other reviews, (iv) visually presenting reviews to simplify understanding and benefits from. Reviews. Projects on this theme can focus on specific categories of project artefacts (e.g., presentations, requirement documents, project demos). Projects can use a specific course to illustrate (e.g., archiving lectures, questions, answers).

Project Area 11 – Student internships

Internships are key part of project-based learning including industry-based and research-based projects. The goal of this project is to develop an online software service to support students, professionals, and organisations in establishing internships connections and opportunities. The service should support (not limited to): (i) proposing internships, (ii) providing comments and asking questions on internship offers, (iii) searching internships, (iv) recommending students for internships, (v) asking for internship opportunities (kind of Q&A for internship opportunities), (vi) video meetings to discuss opportunities. Projects on this theme can focus on specific categories of internships (e.g., industry or research-based internships).

Project Area 12 – Research stories

Documenting impact of research is needed for various reasons including evaluating research impact, motivating young researchers, and sharing knowledge in general. The goal of this project is to develop an online software service to identify research stories and make them available for general audience on a dedicated video channel (e.g., Youtube, Twitch). Stories can be used as complement to papers, summarize emerging innovations, etc. The service should support (not limited to): (i) uploading the text of a story in short and structured format, (ii) organising a video interview with the contributor(s), (iv) supporting discussions and Q&A to enrich the story, (v) recording and transcribing the interview video to simplify archiving and search, (vi) video meetings to discuss opportunities. Projects on this theme can focus on specific categories of research stories (e.g., novel and interesting research papers, long term impact of research).

Project Area 13 – AI Research papers reading channel

Being aware of research techniques is beneficial to both researchers and practitioners. The goal of this project is to develop an online video streaming reading channel to identify research papers that contribute AI techniques in specific topics (e.g., Natural Language Processing, Bias in AI) and organise reading groups to present and discuss these papers. The service should support (not limited to): (i) identifying papers to present and discuss, (ii) scheduling of reading group meetings, (iii) supporting discussions and Q&A in relation to the discussed paper, (v) curation of related papers (especially papers with code), APIs and open-source projects related to the discussed technique(s).

Project Area 14: Augmenting papers with external information to improve reading experience

People read digital news and other articles (e.g., research papers). Yet most of the reading experience is passive. The goal of this project is to develop a service to improve textual paper reading by providing information about mentions and terms in the paper (e.g., link to Wikipedia articles about a person, a video tutorial about an algorithm). The service should

support (not limited to): (i) highlighting terms and mentions in a paper, (ii) linking terms and mentions to external resources, (iii) asking questions about information mentioned in the paper. Projects in this area can focus on research papers or news articles.

External projects:

Project area 15: Digitally Verified UNSW Student Credential in an IOS Wallet

In our increasingly digitalized society and a highly mobile global workforce, there is a need for highspeed verification of employee's credentials that are secure and immutable. Often, UNSW students seeking employment would have to request sealed copies of their transcripts to be sent with their job applications. We are proposing the use of Public Key Infrastructure (DPKI) to be incorporated in digitally certified transcripts of UNSW students that can be stored in IOS Apple wallet app. Such digital transcripts will cut down on operations and costs required each time our UNSW students need to apply for a position that would require verified credentials that are issued by UNSW that can broadcast its public key on its main website. For an added layer of security and authentication, UNSW students can apply for a public key to be stored with UNSW that could be requested by potential employers to be verified with the students' digital signature that can also be added to the digital transcripts. The aims of projects in this area are:

- Implementation of Decentralized Public Key Infrastructure (DPKI)
- Creation of a digital certification module that could be added to IOS Apple wallet app.
- Development of a simple tool with a user interface that allows an end user to verify digital signatures within digital certificates with public keys provided by UNSW

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Project area 16: Creating Visual Output from XML Invoices

Worldwide, exchanging business documents electronically is on the rise and in particular electronic invoices. In February 2019, Trans-Tasman eInvoicing Interoperability Framework was announced. The aim of the Framework is to provide certainty on how a prescribed set of established open standards can be used to extend e-Invoicing to all Australian and New Zealand businesses, including Government as a buyer, to minimise the cost of implementation for software providers and enhance business interactions (especially for micro to small businesses) by making invoicing an integrated digital interaction. Service providers can adopt this Framework to provide innovative solutions to businesses. A central piece of the Framework is the use of the Universal Business Language specification (UBL 2.0). Universal Business Language (UBL) is a standard format developed by an OASIS Technical Committee in conjunction with other industry players as a solution to simplify invoicing processing. More specifically, a UBL file is a document available in an XML file format. Further, the XML file comes with all the info you'd find in a typical PDF invoice, but

in an organized, standard format. With this file, you can send invoice data from one accounting system to another automatically. In essence, this means that trading partners can send and receive invoices from anywhere. The aims of the projects are:

- Study the xml specification and create examples that would be typical of electronic invoices being communicated in Australia
- Develop a module for generating visual outputs from the electronic invoices (e.g. HTML, PDF). This module should have various configuration options like changing the style or the language
- Develop a simple tool with a user interface for an end user to invoke the tool and visualize the outputs

The project would require programming experience particularly in the area of xml processing. Java is preferred but not essential.

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