



UNIVERSITY OF BRITISH COLUMBIA'S
OKANAGAN CAMPUS

**Canadian Undergraduate Computer
Science Conference**

2015

**Congrès Canadien des Étudiants en
Informatiques**

July 8 - 11 2015
Du 8 au 11 juillet 2015

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HOUSEKEEPING / INFORMATIONS GÉNÉRALES

1.1 WELCOME / BIENVENUE

Welcome to the Canadian Undergraduate Computer Science Conference (CUCSC) 2015! We are very excited to host the inaugural CUCSC in Kelowna.

Bienvenue au Congrès canadien des étudiants en informatique (CCÉI) 2015! Nous sommes très heureux de présenter le CCÉI à Kelowna.

1.2 WIFI

You have two ways of accessing the internet on campus:

- If your university takes part in the "eduroam" network, choose that network and input your usual university username and password like: username@ubc.ca, password
- Otherwise, you can use "UBC Visitor."

Il y a deux façons d'accéder à l'internet sur le campus:

- Si votre université participe au réseau "eduroam," il faut choisir ce réseau et saisir votre nom d'utilisateur et mot de passe comme ceci: nomusager@ubc.ca, mot de passe
- Sinon, vous pouvez utiliser "UBC Visitor."

1.3 SPECIAL EVENTS / ÉVÉNEMENTS SPÉCIAUX

WINE TOUR The opt-in event for the CUCSC this year will be attending a wine tour, at Ex Nihilo in Winfield. It will take place on the evening of Thursday, July 9th. We will be providing transport to and from the event which will include crackers and cheese pairings.

ROUTE DES VINS L'événement optionnel pour le CCÉI cette année sera de faire une tournée de vin, à Ex Nihilo à Winfield. Cela aura lieu dans la soirée de jeudi, 9 juillet. Nous fournirons le transport aller-retour de l'événement qui comprendra des craquelins, des bouchées de fromage et bien sur, des dégustations de vins.

WOMEN IN COMPUTER SCIENCE DINNER On Friday, July 10th, we are holding a Women in Computer Science dinner to promote gender equality in Computer Science. The panel will feature women with backgrounds in academia and the industry, with each panelist contributing their unique insight and opinion on an array of discussion topics and questions.

SOUPER DES FEMMES EN INFORMATIQUES Le vendredi 10 juillet, il y aura un souper à l'honneur des femmes en informatique afin de promouvoir l'égalité des sexes en informatique. Le souper mettra en vedette les femmes ayant de l'expérience dans le milieu universitaire ainsi que dans l'industrie. Chaque panéliste partagera leurs expériences et conseils sur un éventail de sujets et de questions de discussion.

RECRUITMENT FAIR We will be hosting a small recruitment fair advertising upcoming employment or graduate opportunities to some of our participating sponsors. This event will take place on Saturday the 11th in the Fipke Foyer.

SALON DE RECRUTMENT Nous avons organisé un petit salon de recrutement offert par nos commanditaires à propos des prochaines possibilités d'emploi ou d'études supérieures à ne pas manquer. Cet événement aura lieu le samedi 11 dans le Foyer Fipke.

CLOSING BANQUET Our closing banquet will be held at the university ballroom in UNC 200. The banquet will begin with closing remarks and awards for the best talk. Dinner will be followed by music picks from your organizing committee.

BANQUET DE CLÔTURE Le banquet de clôture aura lieu à la salle de bal de l'université située dans le local suivant : UNC 200. Le banquet débutera par des remarques et des prix de clôture tel que la meilleure présentation. Le dîner sera suivi par un choix de musique sélectionné par le comité d'organisation.

1.4 FOOD AND DRINK / ALIMENTATION

The majority of your meals during CUCSC will be provided by us, but it's reasonable that you will need nourishment outside of that. We will be providing a light breakfast, but if you would like something heavier we do have a few options available on campus. Here is a list of our favourite spots.

- Coffee on campus: Starbucks in Fipke, and Tim Horton's outside the library

- Coffee off campus: Formosa Tea Cafe, Pulp Fiction, Starbucks, Tim Horton's, The Bean Scene
- Food on campus: Sunshine Cafeteria, Tim Horton's, Starbucks
- Downtown: Bai Tong Thai, Dawett Fine Indian Cuisine, Yellow House Restaurant, momo sushi and more

La majorité des repas pendant le CCÉI seront fournis par le congrès, mais c'est possible que vous ayez besoin ou envie de manger autre chose. Voici une liste de nos destinations préférées.

- Cafés sur le campus: Starbucks dans le foyer Fipke, Tim Hortons à l'extérieur de la bibliothèque
- Cafés hors campus: Formosa Tea Cafe, Pulp Fiction, Starbucks, Tim Horton's, The Bean Scene
- Restaurant sur le campus: Sunshine Cafeteria, Tim Horton's, Starbucks
- Centre-ville: Bai Tong Thai, Dawett Fine Indian Cuisine, Yellow House Restaurant, momo sushi et bien plus.

1.5 TRANSPORTATION / TRANSPORT

You can find schedules at bctransit.com/kelowna/schedules. The cost of bus fare is \$2.25 for university students.

Vous pouvez trouver les horaires au bctransit.com/kelowna/schedules. Le coût des billets d'autobus est de \$ 2,25 pour les étudiants universitaires.

1.6 CUCSC 2016 CCÉI

If you are interested in organizing next year's CUCSC please don't hesitate to talk to one of this year's conference organizers. Organizing the conference is a lot of fun and a very rewarding experience, which we highly recommend.

Si vous êtes intéressé à organiser le CCÉI l'année prochaine, n'hésitez pas à parler à l'un des organisateurs du congrès de cette année. L'organisation du congrès offre beaucoup de plaisir et une expérience très enrichissante, nous vous encourageons vivement à y prendre part.

KEYNOTE SPEAKERS / CONFÉRENCIERS

Dr. Frank Maurer

University of Calgary

Dr. Frank Maurer received his Diploma (German Undergrad Degree) in 1989 and Doctorate (Dr. rer. Nat.) in Computer Science from the University of Kaiserslautern in Germany in 1993. After eight years working as a Researcher at the University of Kaiserslautern, Maurer joined the Faculty of Science at the University of Calgary in 1997. Maurer's research interests are agile software methodologies, application engineering for digital surfaces, big data analytics and cyber infrastructure for emergency management. His research is driven by real-world problems coming from a large number of industry partners. Maurer is the Principle Investigator of the NSERC SurfNet Strategic Network (Digital Surface Software Application Network), and has over the last 6 years received eight NSERC Engage grants and two NSERC Collaborative Research and Development grants for his work covering a broad spectrum of research areas including multi-surface systems for retail spaces and emergency control centres. Maurer is also the Chief Technology Officer of VizworX (vizworx.com), sits on the boards of Cybera, a not-for-profit technical agency, and the IBM Alberta Centre for Advanced Studies.

Dr. Frank Maurer a reçu son diplôme (baccalauréat allemand) en 1989 et un doctorat (Dr. rer. Nat.) en informatique de l'Université de Kaiserslautern en Allemagne en 1993. Après huit ans à travailler comme chercheur à l'Université de Kaiserslautern, Maurer a rejoint la Faculté de science l'Université de Calgary en 1997. Les intérêts de recherche de Maurer sont les méthodologies agiles de logiciels, l'ingénierie d'application pour les surfaces numériques, les grandes analyses de données. Sa recherche est motivée par les problèmes du monde réel provenant d'un grand nombre de partenaires du milieu industriel. Maurer est le chercheur principal du Réseau stratégique SurfNet CRSNG (Logiciel Numérique de Surface Application Network). Au cours des 6 dernières années, il a reçu huit subventions CRSNG « Engage » et deux « Collaborative Research » CRSNG ainsi que plusieurs subventions de développement pour son travail couvrant un large éventail de domaines de recherche comprenant les systèmes multi-surfaces pour les espaces commerciaux et les centres de contrôle d'urgence. Maurer est aussi le directeur en technologie de VizworX (vizworx.com), il siège au conseil de Cybera, un organisme sans but lucratif, et au Centre IBM de l'Alberta pour les études avancées.

Brenda Bailey Gershkovitch

Silicon Sisters Interactive Inc

Brenda is the CEO and co-founder of Silicon Sisters Interactive, a female focused studio building top quality games for Women and Girls. Launched in 2011, the studio has successfully introduced a tween series called School26 to iOS and Android. www.school26.ca The studio is currently working on creating "Romance" as a viable genre in the video game sector, and has introduced a series for adult women called "Everlove" September 2013. Bailey Gershkovitch was previously the Managing Partner of Deep Fried Entertainment Inc., building sports and racing games for the Nintendo Wii, the Nintendo Dual Screen (DS) and the Sony PlayStation Portable (PSP) with publishing partners Sega of American and Take Two Sports. Brenda frequently speaks at Conferences on a wide range of issues including: Women in Games, Change Management, Emerging Video Games Markets, and Legal issues in Video Games. She is board member of DIGIBC, and sits on the Advisory Board of Women in Games International, in LA. Brenda is a past board member of the Canadian Video Game Awards and Advisory Board member of GDC Canada, and has been a visiting lecturer at both Vancouver Film School and the Centre for Digital Media teaching the business of video games. Brenda is currently studying Law at the University of British Columbia, with a focus on Intellectual Property and Digital Media Law.

Brenda est PDG et co-fondatrice de Silicon Sisters Interactive, un studio féminin de fabrication de jeux de qualité pour filles et femmes. Lancé en 2011, le studio a introduit avec succès une série intitulée School26 pour iOS et Android. (<http://www.school26.ca>). Le studio travaille présentement à promouvoir le thème de la romance dans le domaine du jeu électronique et a introduit une série pour adultes intitulée « Everlove » en septembre 2013. Plus anciennement, Bailey Gershkovitch était auparavant « Managing Partner » de Deep Fried Entertainment Inc., qui développait des jeux de sports et de courses pour Nintendo Wii, Nintendo DS et PlayStation Portable en partenariat avec Sega of American et Sony Sports. Brenda participe régulièrement à des congrès pour y donner des conférences sur un vaste éventail de sujets tels que les femmes en jeux vidéo, les marchés émergents en matière de jeux vidéo, ainsi que les droits légaux regardant les jeux vidéos. Elle est membre du conseil d'administration DIGIBC, et siège au conseil consultatif des femmes dans les jeux Internationaux, à Los Angeles. Brenda est une ancienne membre du conseil du «Canadian Video Game Awards » ainsi que du conseil consultatif canadien de la GDC Canada. Elle a été professeure invitée à la fois au « Vancouver Film School » et au « Centre for Digital Media » afin d'y enseigner l'entreprise de jeux vidéo. Brenda étudie présentement en droit à l'université de la Colombie-Britannique, avec une concentration sur la propriété intellectuelle et le droit des médias numériques.

Dr. Richard Hoshino

Quest University

Richard Hoshino teaches mathematics at Quest University, an innovative liberal arts and sciences university located in Canada's recreation capital. Prior to his arrival at Quest in 2013, Richard was a post-doctoral fellow at the National Institute of Informatics in Tokyo (2010-2012), and was a mathematician with the Government of Canada (2006-2010). Richard completed his Ph.D. at Dalhousie University in Halifax, Nova Scotia, and has published 26 research papers across numerous fields, including graph theory, marine container risk-scoring, biometric identification, and sports tournament scheduling. In January 2015, Richard published his first novel, "The Math Olympian", the story of an insecure small-town teenager who commits herself to pursuing the crazy and unrealistic goal of representing her country at the International Mathematical Olympiad, and through that decision, discovers meaning, purpose, and joy.

Richard Hoshino enseigne les mathématiques à l'Université Quest, une université innovante des arts libéraux et des sciences situé dans la capitale des loisirs extérieurs du Canada. Avant son arrivée à Quest en 2013, Richard était un chercheur post -doctoral à l'Institut nationale d'informatique de Tokyo (2010-2012), et était un mathématicien pour le gouvernement du Canada (2006-2010). Richard a obtenu son doctorat à l'Université Dalhousie à Halifax, en Nouvelle-Écosse, et a publié 26 articles de recherche à travers de nombreux domaines, y compris la théorie des graphes, la cotation des risques des conteneurs marins, l'identification biométrique, et la synchronisation d'horaire pour tournoi sportif. En Janvier 2015, Richard a publié son premier roman, « The Math olympienne », l'histoire d'une adolescente timide provenant d'une petite ville qui s'engage à poursuivre un objectif fou et irréaliste : représenter son pays à l'Olympiade internationale de mathématiques. À travers cette décision, elle découvre un sens à la vie, un but et la joie de vivre.

Dr. Patricia Lasserre

University of British Columbia Okanagan

Dr. P. Lasserre completed her PhD on Vision for Autonomous Robots in Toulouse (France) in 1996. Dr. P. Lasserre has been involved in the Canadian educational system since 1999, first as College Professor and then as Associate Professor at Okanagan University College until her appointment as Associate Professor at UBC Okanagan in July 2005. In 2010, Dr. P. Lasserre was the co-recipient of the Teaching Innovation and Excellence Award at UBC Okanagan for her adaptation of team-based learning for a first term programming class. Her research interests are mainly on the Scholarship of Teaching, specifically on student engagement in the classroom, and on facilitating/enhancing instruction with the use of technology. Since 2011, she serves as Associate Dean, Students and Curriculum in the Barber School of Arts and Sciences at UBC Okanagan. Since last year, she also serves as one of the two Academic Sponsors for the Student Academic Sys-

tem Initiative, where she gets the opportunity to provide leadership on another passion of hers, namely, user-centred design and user experience (UX).

Dr P. Lasserre a terminé son doctorat sur la Vision pour la robotique autonome en environnement naturel à Toulouse (France) en 1996. Dr P. Lasserre est impliquée dans le système éducatif canadien depuis 1999, d'abord comme professeur de collège, ensuite comme professeur associé à Okanagan University College avant de continuer à l'Université de Colombie Britannique dans l'Okanagan en Juillet 2005. En 2010, Dr P. Lasserre a reçu le Prix d' Excellence en Enseignement et Innovation pour son adaptation de la méthode d'enseignement appelée 'Team-based Learning' à une classe de programmation de première année d'université. Ses centres d'intérêt en recherche portent principalement sur l'amélioration des méthodes d'enseignement, en particulier sur l'engagement des élèves dans la classe, et l'utilisation de la technologie pour faciliter ou améliorer l'instruction. Depuis 2011, elle est doyen associé à l'école des Arts et des Sciences à UBC Okanagan. Depuis l'année dernière, elle sert également comme l'un des deux leader académiques pour le changement du système informatique de gestion des étudiants, où elle a la possibilité de promouvoir et soutenir sur une autre de ses passions, la conception informatique axée sur l'expérience de l'utilisateur (UX).

Stephanie Van Dyk

Google

Stephanie Van Dyk is a Site Reliability Engineer who likes really big, broken things. Originally hailing from Kelowna, BC, she went to school at UBC Vancouver where she studied math and computer science. After graduating, she moved to California to work for Google as an SRE. In November 2013, Stephanie got swept up in one of the most high profile technical disasters of all time – the failure of healthcare.gov. She currently works on Search at Google.

Stephanie Van Dyk est une ingénieure en fiabilité de page web qui adore les choses en format géant et défectueuses. Originaire de Kelowna, en Colombie-Britannique, elle a étudié à UBC de Vancouver où elle a étudié les mathématiques et l'informatique. Après ses études, elle a déménagé en Californie afin de travailler pour Google en tant qu'ingénieure en fiabilité. En Novembre 2013, Stephanie a travaillé dans l'une des pires catastrophes techniques de haut niveau de tous les temps : l'échec de healthcare.gov. Elle travaille actuellement sur « Search » avec Google.

Dr. Charles Ling

University of Western Ontario

Charles Ling obtained both his MSc and PhD from University of Pennsylvania, and he is currently a Professor in the Department of Computer Science and Science Distinguished Research Professor at the University of Western Ontario. He is the lead author of the book "Crafting Your Research Future". His main research areas include machine learning, data analytics, and their applications in health and finance.

Charles Ling a obtenu sa maîtrise ainsi que son doctorat à l'université de Pennsylvanie. Il est présentement professeur au département d'informatique ainsi qu'un chercheur distingué à « University of Western Ontario ». Il est l'auteur principal du livre intitulé « Crafting Your Research Future ». Son domaine de recherche se concentre sur l'apprentissage automatisé, l'analyse de données et leurs applications dans le domaine de la santé et de la finance.

 SCHEDULES / HORAIRES

3.1 GENERAL SCHEDULE / HORAIRE GÉNÉRAL

Wednesday, July 8th / Mercredi, le 8 juillet

12:00 PM - 3:00 PM	UNC 200	Registration / Enregistrement
3:00 PM - 4:00 PM	Nicola	Residence Check-in / Enregistrement d'hébergement
4:00 - 4:30 PM	UNC 200	Opening Remarks / Discours d'ouverture
4:30 - 5:30 PM	UNC 200	Opening keynote / Conférencier principal d'ouverture: Dr. Frank Maurer
5:30 PM	Fipke Foyer	Group photo / Photo de group
6:00 - 8:00 PM	UNC 200	Opening banquet / Banquet d'ouverture

Thursday, July 9th / Jeudi, le 9 juillet

7:30 - 8:30 AM	UNC 200	Breakfast / Déjeuner
9:00 - 10:30 AM	Lib 304	Student talks / Conférences étudiantes
9:00 - 9:20 AM		Sydney Pratte
9:20 - 9:40 AM		Devon Harker & Joshua Haskins
9:50 - 10:10 AM		Bryan Alfaro
10:10 - 10:30 AM		Erik Haugrud
10:30 - 10:00 AM	Fipke Foyer	Coffee break / Pause café
11:00 AM - 12:00 PM	Lib 304	Keynote speaker / Conférencier: Brenda Bailey Gershkovitch
12:00 - 1:00 PM	UNC 200	Lunch / Diner
1:30 - 2:30 PM	Lib 304	Student talks / Conférences étudiantes
1:30 - 1:50 PM		Carrie Mah
1:50 - 2:10 PM		Alex Yakovlev
2:10 - 2:30 PM		Edrienne Manalastas
2:30 - 3:00 PM	Fipke Foyer	Coffee break / Pause Café
3:00-4:00 PM	Lib 304	Keynote speaker / Conférencier: Dr. Richard Hoshino

5:00 - 8:00 PM	G Lot	Optional Wine Tour
5:00 - 8:00 PM	Courtyard	Optional UBC Endowment Lands Hike
5:00 - 8:00 PM	UNC 200	Optional game of Spyfall

Friday, July 10th / Vendredi, le 10 juillet

7:30 - 8:30 AM	UNC 200	Breakfast / Déjeuner
9:00 - 10:30 AM	Lib 304	Google's Design Sprint Workshop for Mobile - Carrie Mah
10:30 - 10:00 AM	Fipke Foyer	Coffee break / Pause café
11:00 AM - 12:00 PM	Lib 304	Keynote speaker / Conférencier: Dr. Patricia Lasserre
12:00 - 1:30 PM	UNC 200	Lunch / Diner
1:30 - 2:30 PM	Lib 304	Student talks / Conférences étudiantes
1:30 - 1:50 PM		Jessa Marley
1:50 - 2:10 PM		Mitchell Corbett
2:10 - 2:30 PM		Yasha Pushak
2:30 - 3:00 PM	Fipke Foyer	Coffee break / Pause Café
3:00-4:00 PM	Lib 304	Keynote speaker / Conférencier: Stephanie Van Dyk
5:00 - 8:00 PM	UNC 200	Women In Computer Science Dinner / Dîner à l'honneur des femmes en informatique

Saturday, July 11th / Samedi, le 11 juillet

7:30 - 8:30 AM	UNC 200	Breakfast / Déjeuner
9:00 - 10:30 AM	Lib 304	Student talks / Conférences étudiantes
9:00 - 9:20 AM		Bria Kindersley
9:20 - 9:40 AM		Miriam Castillo
9:50 - 10:10 AM		Kevin Eger
10:10 - 10:30 AM		Yasha Pushak
10:30 - 10:00 AM	Fipke Foyer	Coffee break / Pause café
11:00 - 12:00 AM	Lib 304	Keynote speaker / Conférencier: Dr. Charles Ling
12:00 - 1:00 PM	UNC 200	Lunch / Diner
1:00 - 3:00 PM	Fipke Foyer	Recruitment Fair / Salon de recrutement
2:45 - 5:45 PM	Bus Loop	Optional Outing to Beach or Downtown
6:00 - 6:30 PM	UNC 200	Closing Remarks & Awards / Discours de fermeture et remise des prix
6:30 - 8:00 PM	UNC 200	Closing Banquet / Banquet de fermeture

4.1 KEYNOTE ABSTRACTS / RÉSUMÉS DES CONFÉRENCIERS PRINCIPAUX

PROBLEM-DRIVEN RESEARCH ON MULTI-SURFACE SYSTEMS**Dr. Frank Maurer**

University of Calgary

Language: English

Research is meant to discover new knowledge and have a positive impact on society. The NSERC SurfNet Network (<http://player.vimeo.com/video/65685174>, <http://nserc-surfnet.ca>) is a Canadian research alliance of academic researchers, industry partners, and government collaborators. The goal of SurfNet is to improve the development, performance, and usability of software applications for surface computing environments: nontraditional digital display surfaces including multi-touch screens, tabletops, and wall-sized displays. Surfaces naturally support group work and collaboration. Using a sequence of collaborative research projects for illustration, the presentation will discuss the problem-driven research approach that pursues leading edge research to address practical problems.

WHAT I LEARNED FROM KIM KARDASHIAN, AND HOW TO MAKE IT AS A WOMEN IN THE GAMES INDUSTRY.**Brenda Bailey Gershkovitch**

Silicon Sisters Interactive Inc.

Language: English

Brenda Bailey Gershkovitch will deliver a two part presentation on women in games. First, she will explore the relationship of women and games by looking at what we know about how women game, and the current market share made up by female consumers. The second aspect of her talk is to consider the experience of women working in the traditionally male dominated games industry. Bailey Gershkovitch will share some tips of the trade for those who want to have a career in this exciting and creative area of computer programming, while leaving time for questions and exploration with the audience.

INSPIRING CHANGE THROUGH COMPUTER SCIENCE

Dr. Richard Hoshino

Quest University

Language: Bilingual

In this informal and interactive talk, I will share the "existential crisis" I encountered during graduate school, when I realized that I was spending hours and hours each day working on problems that were of interest to just a handful of pure mathematicians. While I knew that I was making a difference through my teaching and outreach, I yearned to impact society through my research as well. Over the past decade, I've learned that a math-CS researcher can indeed have a broad impact, and I'll share some ways in which I've applied simple ideas in computer science to inspire measurable change: catching cocaine smugglers; reducing wait times at Canadian airports; implementing a roommate-matching algorithm for undergraduate students; and helping a billion-dollar professional baseball league design a regular-season schedule to cut costs and reduce greenhouse gas emissions.

HOW RESEARCH CAN INFORM TEACHING

Dr. Patricia Lassere

University of British Columbia Okanagan

Language: Bilingual

In the last decade, much consideration has been given to improving teaching using evidence-based research. In this talk, I will present how research in Education is informing and transforming university education, how such research is used to adapt teaching in Computer Science classes, and I will discuss the challenges and opportunities that technology can provide to assist teachers and students through the learning process.

FINDING SOMETHING WORTH DOING

Stephanie Van Dyk

Google

Language: English

Not every tech new grad wants to work on the next big app that helps teenagers share photos. There's lots of other interesting things to do in the world, if you know where to look. Drawing heavily on her own experiences, including stories of working on Healthcare.gov and at Google, Stephanie will discuss how to find interesting problems, smart people and career satisfaction in tech-land.

HOW TO CHOOSE A GRADUATE PROGRAM? OR NOT AT ALL?

Dr. Charles Ling
Western University
Language: English

What is it like to be a graduate student? Is it fun and rewarding? Wait, am I suitable to be one? If so how do I choose the right program? Do only nerds try to get PhD degrees? What is my job perspective like? In this talk, I try to answer these questions so you can make a better decision.

UTILIZING PROJECTED PIXELS IN A RETAIL ENVIRONMENT

Sydney Pratte

Retail, Multi-surface environments, Device Interaction, Projected Displays (University of Calgary)

07/09 9:00 AM Lib 304

Over the past several years, traditional retail outlets have seen a noticeable decline in shoppers, as digital shopping has provided a newer and less costly shopping alternative for consumers. While online digital shopping provides immediate product information, it lacks the experiences provided by physically touching a product that a retail store provides. Newer immersive digital shopping environments bring together digital product information with physical products in order to increase customer engagement and enhance the retail shopping experience. In this paper, I propose a potential avenue of increasing customer engagement for retail spaces, with a project exploring the applicability of low-resolution projected pixels in a spatially aware multi-surface retail space. The primary goal of this project is to investigate ways of engaging users to interact with information in a virtual space. First, I give an introduction to the problem, an overview of the current work in this area, followed by a potential solution for the retail space. I then report on the results of a pilot study that explored how users respond and interact with projections in a multi-surface retail environment and conclude with future work.

Recommended background: Retail; Multi-surface environments

AUGMENTED REALITY BASED SCAVENGER HUNT FOR STUDENT ORIENTATION

Devon Harker and Joshua Haskins

Augmented Reality (University of Northern British Columbia)

07/09 9:20 AM Lib 304

Augmented reality (AR) refers to technology that supplements the real world by overlaying virtual objects including sounds, graphics, or videos. In this presentation, we demonstrate a project that we did as a part of an undergraduate research project course at the University of Northern British Columbia (UNBC). We used augmented reality via a mobile application to design a scavenger hunt app that can encourage students to explore the university's campus. By exploring the campus on their own, our intention is to have the visitor or student become more comfortable navigating the university campus in addition to gaining knowledge about local artists and important members of the university's history. With smartphones being ubiquitous, we believe, a mobile application designed for this purpose is accessible to a steadily growing audience.

EVALUATING XML GENERATORS FOR SOFTWARE TESTING

Bryan Alfaro

Software Engineering, Software Testing (The King's University))

07/09 9:50 AM Lib 304

XML is the standard language for data exchange between web applications. The development novel testing strategies for web applications that rely on XML is critical in reducing security threats and software defects. Existing tools such as ToXgene (Barbosa et al. 2002), TAXI (Bertolino et al. 2007) and AGOXI (Vanderveen et al. 2014) can be used to automatically generate XML instances from an XML schema, however their suitability for use as an automated testing solution for Web Services remains unexplored. Each of the tools are evaluated for efficacy by applying the XML generators to over 12,000 unique XSD extracted from real-world WSDL documents. The XML generators were examined to determine the coverage of the grammatical space and their adequacy to produce valid XML instances from the XSDs. A summary of the capabilities and advantages and disadvantages for each XML instance generation tool is presented alongside an overview of the evaluation process. Preliminary results of the evaluation suggests that AGOXI and TAXI may be suitable, while ToXgene does not appear to be viable as an automated XML instance generator for Web Service testing.

ADAPTING XML INSTANCE GENERATORS FOR WEB SERVICE TESTING

Erik Haugrud

Software Engineering, Software Testing (The King's University)

07/09 10:10 AM Lib 304

An automated testing framework for web services using generated XML instances is presented. Three existing XML instance generators are TAXI, ToXgene, and Agoxi. Through the creation of a standardized evaluation framework, the three XML instance generators can be compared. The proposed evaluation framework uses mutation analysis to accurately simulate real world programming faults in order to measure the failure detecting ability of XML instance generators. The development of a module responsible for adapting each of the XML instance generators for use in the evaluation framework is presented. Given a WSDL and a test generator, the module executes the selected generator and collects the output into a standardized format for use in the evaluation framework. The results can then be passed on to the framework's test execution module which stores the outcome of the analysis in a database. Evaluating the XML instance generators with this framework will assist in choosing the most robust choice for web service testing.

HOW TO BE A SUPERHERO: GIVING BACK TO THE COMMUNITY

Carrie Mah

University of Calgary

07/09 1:30 PM Lib 304

Being a student is more than just attending classes, completing assignments, and getting good grades. It's also about giving back to the community through contributions, volunteerism, and mentorship. This talk is for anyone interested in helping others, but who may not know where to start or find an organization that fits their interests and goals. I will present this as a guide on how to tap into your academic powers to help others. It will help you understand the benefits of volunteerism, explore how to find opportunities within your community, and discover new organizations to be a part of.

ALL CODE IS BAD

Alex Yakovlev

Web Development (University of British Columbia Okanagan)

07/09 1:50 PM Lib 304

So, you want to be a good developer? You want to write good, readable code that works? So do I. Unfortunately, if you've ever started a new project, you know how quickly your beautiful work turns into an unmanageable mess. This is especially true in the wonderful world of web development. Luckily, some smart people have created various tools to help with the headache. Before you dive into the web that is the Web (named appropriately), it might just be a great idea to have a look at some of these tools and why you should (or shouldn't) use them. We will look at some current tools that are available for managing and building your project, including back-end and front-end assets, some frameworks, and other libraries and utilities, and why it might be worth your time to get more acquainted with them. While the focus will be in the field of web development, we will also look at some field-independent strategies for writing better code, if this is even possible. After all, even the best tools and frameworks are written in code, and all code is bad.

Recommended background: <http://www.stilldrinking.org/programming-sucks>

TIPS FOR A SUCCESSFUL PRESENTATION

Edrienne Manalastas

University of Calgary

07/09 2:10 PM Lib 304

Have you ever listened to a boring presentation before? Are you worried that your presentation is as boring? Don't worry, unlike the P versus NP problem, this one can be solved relatively more easily! Being a Computer Science undergraduate does not only consist of creating solutions to problem sets. Sometimes, the presentation of your findings is more important. But how do you make sure you're getting your point across? If you want to improve how you present your ideas, this talk is for you. I will be talking about the factors which make a good presentation and how you can incorporate these factors when presenting your ideas. This will help you understand what's going on the mind of your audiences as you speak, and what you can do to use that knowledge to your advantage.

GOOGLE'S DESIGN SPRINT FOR MOBILE

Carrie Mah

University of Calgary

07/10 9:00 AM Lib 304

When creating your own project, do you find yourself diving into code first? Designing is an essential part of creating a successful project - whether it is an app, website, or a school assignment. It's not just for the designers, but for developers as well. When working in an industry with multiple disciplines, it is part of your job to inform whether a design is feasible. Learn how to design for mobile using Google's Design Sprint framework (<http://www.gv.com/sprint/>). Over 90% of Americans own a cell phone, it's time to develop with mobile in mind. You'll be split into groups and get a taste of what's involved with Google's framework, sans communicating with the client. This workshop is intended for everyone of all disciplines and ages. Although it concentrates on mobile design, the steps you'll go through applies to any platform. If you're interested in mobile development, learning what a design sprint looks like, or interested in what a Google framework looks like, this workshop is for you!

Disclaimer: Content used was based on the Google Design Sprint. The workshop format is based off the Google Women Techmakers Summit. Slides created by Carrie Mah.

AN AGENT-BASED MODEL OF HUMAN-BEAR INTERACTIONS

Jessa Marley

Computational Ecology (University of British Columbia Okanagan)

07/10 1:30 PM Lib 304

As human settlement expands further into previously uninhabited areas, interactions with wild animals are likely to increase. The nature of these interactions can be detrimental to humans and animals alike. We focus on the relationship between urban areas and bears, and the consequences of a bear's dietary choices. Using an agent-based model we investigated the effects of human education on the number of bears that enter urban areas repeatedly. Variables tested included human percentage on a landscape, human vigilance, percentage of the human population educated and the method of teaching. The results indicate that education does have a negative impact on the number of human-bear conflicts.

COMPUTATIONAL ALCHEMY

Mitchell Corbett

Material Science, Optimization (University of Saskatchewan)

07/10 1:50 PM Lib 304

Society is in a constant quest for new materials. Whether it be a material harder than diamond, more conductive than silver, or more insulating than aerogel, new materials feed technological innovation. The classical way to design materials is through experiments. Experiments are expensive, slow, often hazardous, and require a significant amount of human expertise and intervention. Success can often be directly attributed to the experimentalist and the equipment. However, these two success factors are also the two greatest limitations on the materials that can be discovered. Very recently, a new paradigm has emerged in the design of new materials: rational design. Rational design of materials refers to the use of computer simulation, through solving quantum mechanical models, in order to predict the properties of a material from its molecular structure. The idea is that if a mathematical model can reliably predict the properties of a material, one can use supercomputing to efficiently search the space of possible molecules and their positions to construct materials that have optimal properties. Rational design reduces the propose-test-modify cycle and gets new materials from the laboratory to the marketplace in far less time than traditional methods do. In this talk, we will explore such a mathematical model, the use of Particle Swarm Optimization and its variants on it, and practical considerations to prune the search space.

Recommended background: Basic knowledge of chemistry and physics is recommended, but not required.

AN INTRODUCTION TO NON-SMOOTH, CONVEX OPTIMIZATION ALGORITHMS

Yasha Pushak

Optimization (University of British Columbia Okanagan)

07/10 2:10 PM Lib 304

The gradient is a tool commonly used in optimization of smooth or ‘nice’ functions. In the case of non-smooth optimization the gradient is no longer well-defined, which requires the introduction of new tools, such as the sub-differential. Convex functions are a class of functions with properties that can be exploited in optimization algorithms. This talk introduces the theory, and geometric interpretation of the sub-differential, convex functions, and their applications in non-smooth optimization. Many algorithms, such as Steepest Descent, Cutting Planes, and Bundle Methods, have been developed to use the sub-differential to optimize convex functions. The prior two, while natural in concept, are historical algorithms which are not commonly used due to poor performance in practice. We will provide examples of some of the pitfalls of these algorithms, leading to bundle methods and how they overcome these challenges.

Recommended background: First year calculus

TREE-BASED REGRESSION MODELS

Bria Kindersley

Data Analysis, Modeling (Simon Fraser University)

07/11 9:00 AM Lib 304

Linear models are widely used in the prediction of continuous variables. However, decision trees (and variants) can also be used for regression problems and can offer advantages over the more straightforward linear models. This presentation will introduce some of the main classes of regression trees, and discuss some of their strengths and weaknesses.

Recommended background: Some knowledge of linear models might be helpful, but is not required

SOFTWARE LOCALIZATION AND INTERNATIONALIZATION

Miriam Castillo

Okanagan College

07/11 9:20 AM Lib 304

The world is big and composed of many different cultures, societies, and ethnic groups. From around 6.5 billion people living on earth, only about 5% live in North America. Considering these facts, it is important to understand that a serious cultural background investigation and research is necessary when developing or translating software to be marketed on different countries. Software localization starts with the understanding of the culture of each place. When a company decides to market their product on a different country, even if it is their next door neighbor, like for example Canada and the U.S., it is important to understand differences like the particular interpretation of certain images, colours, and words, to translate the product to the adequate graphic interface for the targeted culture. I have worked for many years as a translator and interpreter on different countries for different languages that include Portuguese, Spanish, Italian and English, and worked as a travel agent with different groups of diverse ethnicity, cultures, and countries. In addition, I have also worked as a graphic and web designer, and artist. Adding my experience and background to my actual studies in Computer Science at the Okanagan College, I will share my understanding of the importance of software localization and internationalization, and the opportunity to seek for a specialization known as ‘Software Localization Engineer’.

WHY YOU SHOULD DEVELOP WITH A PHP FRAMEWORK AND WHY IT SHOULD BE *Laravel*

Kevin Eger

Web Development (University of British Columbia Okanagan)

07/11 9:50 AM Lib 304

Computer Scientists are lazy – a phrase all of us have said, heard and live by. What those outside our field fail to recognize is that our self-described laziness is actually “concentrated effort”. Our development methods are chosen to simplify the design process and catalyze our code in to production. Web frameworks satisfy our *laziness* by making development simpler, allowing our software to accomplish its sole purpose: to work. For a long time, PHP received a lot of hate and circled the web like a virus – until Laravel. The Laravel framework has captured the community and driven development in to an elegant and fun process! I’m here to show you what saved PHP from its destiny to live out its dominating lifespan in messy WordPress themes.

Recommended background: basic php and web development knowledge

ROAD DESIGN OPTIMIZATION WITH A SURROGATE FUNCTION

Yasha Pushak

Optimization (University of British Columbia Okanagan)

07/11 10:10 AM Lib 304

Planning new highways is a complex process requiring consideration of several non-trivial cost factors. An initial path is first refined by adjusting its vertical alignment to reduce earthwork cutting, filling, and hauling costs. This optimization problem is then used as a sub-problem that needs to be repeatedly solved with different horizontal alignments, to find an optimal path. The complete optimization process requires significant computation time to solve real-world problems. A surrogate function, which approximates the vertical cost and can be quickly evaluated, can be used to reduce the running time of the full optimization algorithm. This talk builds upon an existing surrogate function, using a “Mass Haul” to better approximate the earthwork hauling costs. Numerical results compare solutions returned by the two versions of the surrogate with the optimal solutions found by the full algorithm.

THANKS / MERCI

We would like to thank our volunteers, supporting organizations, and generous sponsors for making CUCSC 2015 happen. Nous voulons remercier nos volontaires, membres du comité organisateur ainsi que nos commanditaires généreux d'avoir rendu la réalisation du CCÉI 2015 possible.

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CONTACTS

6.1 CONFERENCE CONTACTS / CONTACTS POUR LE CONGRÈS

If you have any questions or concerns during the CUCSC, you can contact us through one of the following avenues:

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- Abby Arnold (Co-President & Founder): 778.823.4772 or abigailanne333@gmail.com
- facebook.com/cucsc2015

Si vous avez des questions ou inquiétudes durant le CCÉI, vous pouvez nous contacter au moyen d'une des façons suivantes:

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