

# COSC 499: Capstone Software Engineering Project



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- Associate Professor of Teaching, Computer Science, UBCO

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Past research:



- Edutainment design, computational thinking for kids, intelligent user interfaces, computational linguistics, second language acquisition



(23) Rules  
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b. early:  $r \rightarrow w / \sigma [ \_$   
inter:  $r \rightarrow w / \# [ \_$   
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Industry experience as  
System Analyst and Project Manager

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  - 2021 Teaching Excellence Award (top teaching award – two per year)
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- Note: May address me as “Dr. Khmelevsky”, “Professor”, or “Youry” (pronounced Yu-riy Hme-lev-skiy).

# From School to Industry

- A typical degree in COSC
  - Year 1: individual work, toy exercises, code templates
  - Year 2: data structures, algorithms, "real" programs
  - Years 3+4: special topics, small projects
- Which skills do you think are most sought after by industry today?



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  - Years 3+4: special topics, small projects
- Industry expectations (in 2023)
  - Top 5 (**Medium**): cloud computing, data structures/algorithms, Github, containers, vim/IDEs
  - Top 5 (**Indeed**): programming languages, database, data structures/algorithms, source control, testing procedures
  - Top 5 (**LinkedIn**): programming, software architecture, testing, object-oriented design, project team experience



- How to bridge the gap?



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  - Pick a direction and learn new things

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- ✦✦ Exercise industry-relevant practices and use industry tools
  - Technology is fast-changing and every sector uses different tools
  - Pick a direction and learn new things
- ✦✦ Work effectively in a team (**Gestalt effect**)
  - Learn to work with people who are not you
  - Accept differences in opinions and not take them personally
  - Embrace differences, recognize strengths, learn from each other

# Lessons Learned from Past Capstones



Past successes for students:

- Hired by external client company
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## Things we should avoid/change:

- Too much client management and demands
- Reports for grading but do not enhance project outcomes
- Teams chosen to maximize project success
- Performance measured based on the quality of the deliverables, but largely ignores the quality of teamwork

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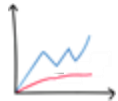
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Enrollment continues to grow, while resources/support remain uncertain

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- Project option
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  - Based on your preferences, after team matching activity
- Team coaching, reflection, self-management
  - Weekly updates that tell us about the project progress and team dynamics
  - Teams should reflect on the data reported to us

# Course Logistics

- In-person classes Mon/Tues and Wed/Thurs:
  - Lectures
  - Team reviews with teaching staff
- Biweekly team checkpoints
  - Gives the teaching staff a "temperature" of the team
- Additional deliverables
  - Short reports, demos (live or video), work in repository, client sessions, peer testing sessions
- Review Canvas course and syllabus
  - Go over: Evaluation Criteria
  - Go over: Tentative Schedule

# Use of AI



- Understand how language models work before using it
  - Relies on training data
  - Can be biased (**why?**)
- Recognize and evaluate AI
  - Identify presence of AI
  - Understand how AI can influence content presented
  - Recognize potential inaccuracies in AI responses
- Navigate AI ethically
  - Issues with data privacy and data ownership
  - How might AI impact technology users and broader society?

# Course Re-Design and Team Formation Software

- Go to Canvas course for Capstone, select "Quizzes"
  - Select "Consent to Study"
  - In the description, click on Qualtrics link
  - Consent to give us access to your survey data after course
  - Complete for participation marks (regardless of your consent decision)

