Introduction to the Course



Building Modern Web Applications - VSP2024

Karthik Pattabiraman Abraham Chan Mohsen Salehi

What is this course about?

- 1. What is this course about?
- 2. Logistics
- 3. Policies
- 4. Grading
- 5. Other



What is this course about?

- Core principles behind building modern web applications
- Abstractions and design principles
- Application of core web technologies such as HTML, CSS, JavaScript, Node.js to the above



What is it NOT about?

Learning of specific technologies

- These will get outdated by the time you finish
- Fast changing field, so new technologies continuously appear and disappear.
- Can learn any technology if you understand the principles and concepts behind web development

Frameworks or libraries (e.g., jQuery)

- These are built on the principles and concepts
- Too many to cover in a reasonable time



Bottom line

You will understand the principles behind web application development



- Not simply copy-paste code from websites to string together a web application
- You will understand why technologies are the way they are, rather than accept it as a statement of fact, and perhaps change them if needed
- It enables you to design novel techniques and technologies in the web application space
- If you put in the effort, this course will be really fun! :-)

Logistics

1. What is this course about?



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Instructor: Karthik Pattabiraman

Karthik Pattabiraman (<u>karthikp@ece.ubc.ca</u>)

- Professor at UBC (joined 2010)
 - PhD from University of Illinois Urbana-Champaign
 - Detour via Microsoft Research in 2009
- Research
 - Web applications' reliability and security
 - Error resilient applications
 - Internet of Things (IoT) security
 - Machine Learning Dependability
- Teaching this course for the sixth time (since 2017)



TA: Abraham Chan

Abraham Chan (abrahamc@ece.ubc.ca)

- PhD Student at UBC
 - BASc & MASc from University of British Columbia



- Machine Learning (ML) Reliability
- Robust ML during Training and Inference
- o ML Compilers



TA: Mohsen Salehi

Mohsen Salehi (msalehi@ece.ubc.ca)

- PhD Student at UBC
 - MASc from Sharif University of Technology



- Security in:
- Internet of Things (IoT)
- Real-time Embedded devices



Logistics - Lectures

Lectures delivered by the instructor in class



- Will consist of a mix of teaching (lecturing) sessions mixed with in-class activities
 - Please bring your laptops fully charged with you to class.
 - Contact us if you do not have a laptop or similar device
 - You will work in teams of three
 - Participation in activities is important
- Lecture notes will be distributed ahead of time
 - No course textbook required; however, we'll recommend some books

Logistics - Software

Any OS: Windows, Mac OSX, or Linux



- Your favorite web browser + built-in web dev tools
 - Firefox
 - Chrome
 - Edge
- The text editor/IDE of your choice :-)
 - VScode highly recommended
 - Sublime
 - Atom
 - Notepad++

Logistics - Interactions

Github



github.com/ubc-vsp24/classroom



- Main hub to find all the links
- Lecture slides, class activities, assignments

Do not distribute

Assignment submissions

Slack



ubc-vsp24.slack.com

Ask and answer questions - bonus points for participation

No Email (unless it's private)

Logistics - Resources

- There's no textbook for the course
 - Lectures will cover all the material
 - Augment with online resources as needed
 - Attendance expected at all lectures



- You're free to use publicly available online resources on the web, but cite them
- You'll have to read up on JavaScript fundamentals outside of class time



Policies

- 1. What is this course about?
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Policies

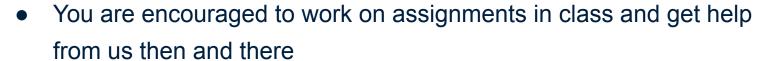
- You are responsible for all material you hand in
 - Review UBC's policies for academic dishonesty



- Plagiarism of any kind will NOT be tolerated
 - Automatically result in you getting an F
 - Lack of knowledge of policies is not a valid excuse
- No collaboration allowed on assignments (except with your team mates later)

Policies

- All material in the exam will be from the lectures covered in class.
 - Will NOT test you on material NOT in the lecture notes!
 - Missing a lecture means that you may miss out
 - o Encouraged to ask questions in class and online



- Office hours will not typically be held outside class
- o If really needed, we can schedule special sessions with you



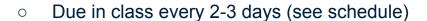
Grading

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Grading

- Assignments (60%)
 - 4 assignments counting for 15% each



- Done in teams of 3 (form teams by today)
- Encouraged to work during class on laptops
- Use Github to commit code (do this periodically)
- No late assignments (no exceptions)



Grading

- Final Exam (40%)
 - To be held on Aug 8th in class



- Must be done individually (NO collaboration)
- Closed notes and Closed book part consisting of multiple choice questions (15%)
- Open notes and Open book part consisting of 5 programming problems (25%) –
 please bring your laptop for this (let us know if you don't have a laptop)

Exam will be auto-graded with manual checking.

Assignments - Git

Open source distributed version control system



- We will be using Git for version control and GitHub for hosting
- Each group will receive a private GitHub repository
- We will create these repositories for you and add you to it
- You must use these repositories for assignment submission

Assignments - Git

Assignment submissions will take place through GitHub



- Create an assignment branch (i.e., assignment-1, assignment-2, assignment-3, assignment-4) by the due date (details later)
 - No other means to submit an assignment will be accepted!
- No late commits will be accepted (unless with instructor permission).
 - Please push your changes to the appropriate branch before 11:59 PM on the due date!

Class Participation

- To learn and benefit from this class, all of you need to participate
 - Asking and answering questions in class and on Slack
 - Participating in in-class exercises
 - Does NOT mean simply showing up in class

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We will award bonus points for class participation (upto 5%)



Other

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Other thoughts

Hope you have fun and learn too



- It's your responsibility to keep up in class
- If you're struggling, let us know early so we can help to the extent possible – or it may be too late
- Feel free to give us feedback and suggestions for improvement etc. –
 these will NOT impact your grade in any way

TODO for Today

 Find a partner to do the assignments with (teams of 3) and receive your Github repository.



 Let us know about your team by end of the first class. Use the following google form to submit your group information:

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https://forms.gle/GBJfRiSKEn1jXa7UA

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 We will then create a GitHub repository for your team, and all the members will be added as collaborators. Make sure you can work with it from your laptops/tablets

TODO for Today - Git Demo

- 1. Clone repository
- 2. Commiting changes
- 3. Pushing/pulling changes from repository
- 4. Branching

<u>Useful Git Commands</u>

git clone
git pull origin main
git push origin main



Creating Branches

git branch assignment-X
git checkout assignment-X
git push -u origin assignment-X
git checkout main
git branch
git branch -r

TODO for Today

- Node.js Setup
- Git setup



Extra Resources on JavaScript

If you want to go beyond the VSP course:



- 1. "Eloquent JavaScript: A Modern Introduction to Programming" by Marijn Haverbeke
- 2. "JavaScript: The Good Parts" by Douglas Crockford (where JavaScript quiz is from)
- 3. "Programming JavaScript Applications: Robust Web Architecture with Node, HTML5, and Moderns JS Libraries" by Eric Elliott
- "Effective JavaScript: 68 Specific Ways to Harness the Power of JavaScript" David Herman
- 5. "JavaScript: The Definitive Guide" by David Flanagan
- 6. "You Don't Know JS" by Kyle Simpson

Not required for this VSP course!