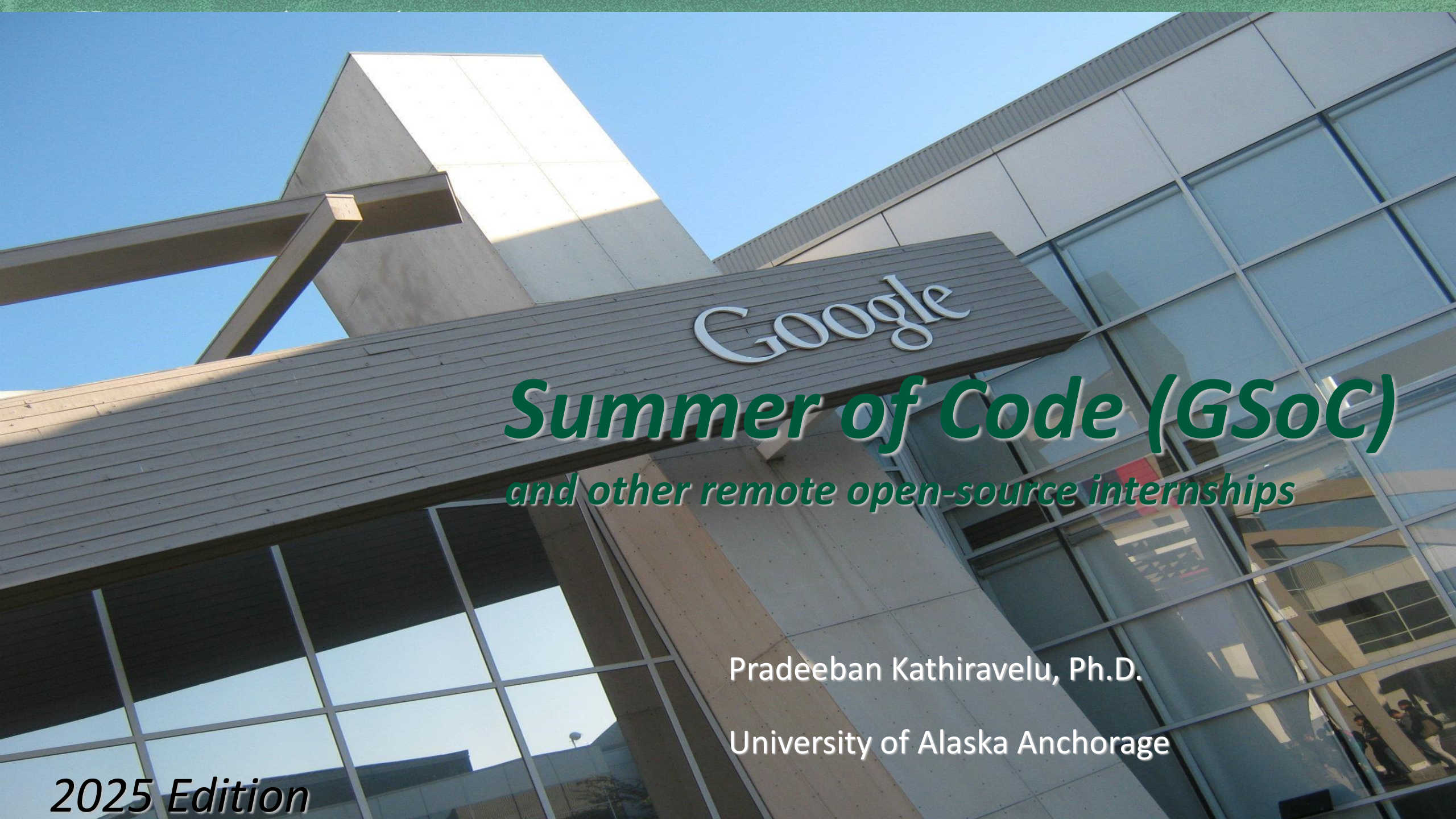

Summer of Code (GSoC)

and other remote open-source internships

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2025 Edition

Paid Remote Open-Source Summer Internships

- Google Summer of Code (GSoC)
- Outreachy
- Season of KDE (SoK)
- Google Season of Docs (GSoD) – for documentation.
- Hyperledger Mentorship Program
- The X.Org Endless Vacation of Code (EVoC)

- More FOSS?
- Annual?
- Stipend?
- Student?
- Country/Location?

Quick Summary of Google Summer of Code (GSoC) and Other Remote Open-Source Internships

- Hands-on experience on a real-world open-source project.
- Funding your summer while working from anywhere.
  - GSoC for a US resident pays up to 6000$ (~17$/hour).
- One-to-One Mentoring.
- May be used for college credits (CSCE A495 for UAA CSCE Students).
- Standing out in the crowd – a big bullet point in your CV.
- Networking and Future Employment.

Quick 3-minute 3-member class activity

- Have you thought of applying for GSoC?
- If not, why? What are your concerns?
- If yes, what help do you need?

- Write them down on a paper.
- Be prepared to read to the class.

Intro to me

(a.k.a. My GSoC Journey)

GSoC didn't limit how many times one can be a contributor (student) back then.

- 2009: Student (Contributor)/AbiWord.
- 2010: Student (Contributor)/OMII-UK.
- 2011* and 2013: Mentor/AbiWord.
- 2014 and 2015: Student (Contributor)/Emory BMI.
- 2016: Mentor/Emory BMI.
- 2019*: Primary Org. Administrator/Emory BMI.
- 2020: Founding Org. Administrator/caMicroscope.
- 2021–2023*: Primary Org. Administrator/Emory BMI.
- 2024* – Present: Founding Org. Administrator/Alaska.
- 2011, 2019, 2023, and 2024: *Represented the organization at the Mentor Summit.

Contents

- Why these internships?
- Before you begin...
- Right Project?
- Apply.
- Code.
- Conclude/Continue.
- What Else?

Today you will hear a lot about…

- Google
- Mentoring organizations (such as Django and Apache).
- Mentors (Mentors, co-mentors, and organization administrators).
- Contributor (previously known as the “student”). i.e., you.
- Project proposal.

Why

- Code for your **preferred** open source **project** for 3 months.
  - And get **individually** mentored and
  - Open for all the adults (18+) from 2022
    - Not only for students.
    - Also anyone who is an ***open-source beginner.***

UAA 2025

Google Summer of Code (GSoC)

- **As an individual**, code for an open-source organization for 3 months.
- Apply up to 3 of your favorite project ideas from the published ideas pages from the organizations.
  - But only one will be accepted at most. (GSoC is competitive).
- Have not participated in GSoC as a contributor more than once!
- Google coordinates and rewards you!
  - Getting Accepted.
  - 2 milestones.
    - First Evaluation. (45% of the stipend)
    - Final Evaluation. (55% of the stipend)
      - A completion certificate!

GSoC Stipends
(other programs have a comparable stipends)

- Based on your residence location and size of the project.
  - Large Size Projects / Full-time
    - (35 hrs/week) / 350 hours in total.
    - 3000 – 6600$.
    - For US residents, ~17$/hour, 6000$ in total.
      - (Not a lot, but that is okay!)
  - Medium Size Projects / Half-time and short projects.
    - (17.5 hrs/week) 175 hours vs. (9 hrs/week) 90 hours
      - 1500 – 3300$ vs. 750 – 1650$.

Some GSoC statistics of 2023

- 171 Organizations
  - 2,400 mentors (and co-mentors) and organization administrators.
- Applications
  - 43,765 from 148 countries.
  - 7,723 proposals. (this means many gave up without even applying!)
- Accepted
  - 967 contributors/projects from 65 countries.
- Completed successfully
  - 80%+ of accepted contributors.
  - Extended projects are still ongoing.

GSoC success rate *is high!*

- Getting accepted is the challenge.
  - ~2% from the pool of potential applicants.
  - ~17% of the submitted proposals.
- Most accepted contributors passed the final evaluations
  - In 2019, 1,276 contributors applied and 1,134 completed successfully!
  - Success rate – 88.87%.

The challenge is not just coding!

Goal for this presentation today

- Getting accepted to the open source remote summer internships.
- Once accepted, completion is – to work on your project.
  - You will have an assigned mentor (or 2 or 3 mentors!).
  - Work with them, following their advice.

Why many proposals end up rejected?

- **Obvious reason:**
  - **We cannot accept everyone.**
    - **Not enough funding (for example, Google cannot fund all the GSoC applicants).**
    - **Not enough mentoring resources.**
    - **Not enough project ideas.**

Why many proposals end up rejected?

- Obvious reason:
  - We cannot accept everyone.
    - Not enough funding (for example, Google cannot fund all the GSoC applicants).
    - Not enough mentoring resources.
    - Not enough project ideas.
- Less obvious reason:
  - Not all proposals are made with care!

Why many proposals end up rejected?

- Make groups of three and discuss common mistakes.

How to make sure you have a chance?

- Follow the proper application template.
  - Don’t just send your CV. There is an application involved!
- Follow the expectations of the mentoring organization.
- Be a pleasant person.
  - We are all volunteers in open-source mentoring.
  - We are selective in who to mentor.

What do you need?

GSoC Timeline (2024)

- **Feb 6th**: Organizations apply.
- **Feb 21st**: Accepted organizations announced.
- March 18th – **April 2nd**: Contributor application period.
- **May 1st**: Accepted contributors announced.

GSoC Timeline..

After getting accepted

- May 1st: Community Bonding Period Begins.
- **May 27th: Coding Starts!**
- July 8th – **July 12th**: Mid Evaluation.
- Aug 19th – **Aug 26th**: Final Submission.
- Extended time for coding.
  - Plan with your mentor if you need additional time to finish your project.
- **Nov 4th**: Contributor "Final" (Extended) Final Submission.

Before you begin..

- These programs are all about being Open Source.
- Get your basics and motivations right.
  - **It has more community appeal than just coding!**
  - Check with your department for credits for successful completion of the program and the additional requirements
    - UAA CSCE – CSCE A495 Computing Internship Project (3 Credits).
- Learn the open-source technologies and netiquettes.
- Join the relevant communication channel.

Technologies

- Version Control Systems
  - Mostly git these days. (svn, mercurial, cvs, …)
- Build Tools
  - Maven, Ivy, Ant, ..
- IDEs (Integrated Development Environments)
  - IntelliJ IDEA, Eclipse, ..
  - Microsoft Visual Studio ..
- Issue Tracker
  - GitHub, Jira, Bugzilla, Trac, ..

Communicating with the organization developers

and the mentor, over the Internet

- Mailing Lists: Dev, User, Commit lists, sub-groups, ..
- Real-time communication: Slack, Discord, Internet Relay Chat (IRC), …
- Issue Tracker
- Forums and wiki
- Blogs
- Zoom, Personal emails, conference calls, .. with the mentors
  [only if they suggest that.]

Effective messages: Be specific

- "I am sorry for this email. I am really stuck in this step. I wonder if you have time to answer my question. It is very urgent for me. I urgently need your help. I know you are also very busy. But maybe you can still help me. I will be eternally grateful…"

- **What do you think of this message?**

Effective messages: Be specific

- Brief and clear.
- No need to be unnecessarily verbose and apologetic.
  - "I am sorry for this email. I am really stuck in this step. I wonder if you have time to answer my question. It is very urgent for me. I urgently need your help. I know you are also very busy. But maybe you can still help me. I will be eternally grateful…" **No**.
  - "Hi FIRSTNAME, I am applying for GSoC project idea 14. But I am stuck at step-2 in its description. It throws a ResourceNotFound Error when I run the script. Am I doing something wrong? Full log is attached herewith."

Effective messages

- **What do you think of this conversation?**
  - Student: Hi
  - Mentor: Hi!
  - S: How are you
  - S: ?
  - Mentor: (no response)
  - S: You there?
  - S: Hope you are doing great!
  - Mentor: (no response)
  - S: I am working on GSoC!

Effective messages: At once!

- Come to the point without long back-and-forth small-talk.
  - Student: Hi
  - Mentor: Hi!
  - S: How are you
  - S: ?
  - Mentor: (no response)
  - S: You there?
  - S: Hope you are doing great!
  - Mentor: (no response)
  - S: I am working on GSoC!

- Student: Hi FIRSTNAME, I am applying for GSoC project idea 14. But I am stuck at step-2 in its description. It throws a ResourceNotFound Error when I run the script. Am I doing something wrong? Full log is attached herewith.
- Mentor: Hi! Thanks for reporting. You should install these (docs link) libraries first. Then, please retry. It will work. I have fixed the documentation now.

Network Etiquettes

- **Don't take (short and impersonal) replies personally.**
- Research (google.. ;)) before asking.
- Be effective in communication.
- Be helpful to others.
- Be ethical; respect.
- NO CAPS! (UNLESS YOU ARE SHOUTING!)
- Dn't snd ur sms msgs.
- Language/English

Proper Addressing

- Address the mentors and other members properly.

– First Name or Preferred calling name.

– NO Sir, Madam, bro, sis, pal..

  - Even if you know them, personally.

– Not too personal.

  - Use “Hi”, instead of “Dear”.

– Gender-neutral and professional.

  - “Folks” over “Ladies and Gentlemen” or “Guys and Girls”.

Flat!

- Open source organizations operate more flat.
- No need for “Dr.” or “Prof.”
- First/preferred-calling name is recommended!

But no selective untitling!

- If you choose to address with last name, avoid using "Ms." or "Mr." for a "Dr." or "Prof." as that is untitling and can be rude.
  - https://womensagenda.com.au/latest/the-practice-of-untitling-stops-women-being-seen-recognised-for-the-work-they-do/

- If you are referring to someone by "Dr. LastName," do the same to all with MD/Ph.D./DSc/DBA/…, regardless of gender, race, type of their terminal/doctorate degree (DBA vs MD), etc.
  - No "Thanks, Dr. Clifford, Dr. Solheim, Vanessa, Raja, Viktoria, and Mr. Chen"

Easier solution? Use first name (or preferred calling name) for all!

Help us maintain inclusiveness

- Don't misgender (i.e., assume a wrong gender.)
  - Happens a lot in emails/Slack/Discord.
  - Refer to folks using their correct gender.
  - If you are not sure, use “they” instead of wrong guesses or “he/she.”
- No “Raja says she will remind the admins.” No “Raja says he/she will remind the admins”
  - Instead, “Raja says they will remind the admins.”
  - Or “Raja will remind the admins. Raja told me that.”
  - Even better, check Raja’s profile “Raja (he/him)” or previous interactions to find their gender.
  - OK to ask Raja privately, “Hey Raja, what’s your pronoun? Sorry, I didn’t know.”
    - If they don’t reply, go with “they” or just “Raja.”

Mailing lists

- Post only to the relevant list/channel.
- Check the mail archives or channel logs first.
- No [URGENT]/[IMPORTANT] tags/flags in the email title/body.
- No unnecessary attachments.
- Avoid screenshots if a textual log is possible.
- No Cross Posting.
- Don't hijack threads.
- Don't post off-topic.

IRC/Slack/Discord Etiquettes

- Join the relevant channels.
- Be an observer first.
- Refer to others using their irc/slack nick to get attention.
  - But avoid misusing.
    - No @channel or @here. It “dings” all of us.
    - Don’t @ those who are offline or away. It “dings” them when they are probably busy… feeding their dog!
- Don't expect immediate replies; wait.
  - Mentors are not your 24/7 support center.
- Discuss in the channel. Minimize direct messages to mentors unless they suggest otherwise.
- ***Don’t be funny unless everyone else is funny. :D***

Find a GSoC mentoring organization..

- Have a look at the list of past GSoC.
- New Organizations.
- Google as the mentoring organizati.
- Introduce GSoC to an organization.

Find THE right project

- Choose a program that you qualify: GSoC (yes?), Outreachy (maybe), …
- Go through the organizations' project ideas list.
- Check for the previous years' ideas from the potential organizations until the accepted organizations are announced and their ideas lists are published.
- You can apply up to 3 GSoC project ideas (from the same or from different organizations).
  - Quality over quantity.
  - Only one will be eventually accepted.
  - Make sure you like all the ideas you apply to.

Project Ideas List

- Project ideas by the organizations are intentionally left generic or “vague” enough.
  - Open for interpretation by the contributors.
  - Clarify with mentors on assumptions and your planned approach.

[1] Automated coastline extraction for erosion modeling in Alaska.

Mentors: Frank Witmer (fwitmer -at- alaska.edu)

Overview: The rapidly warming Arctic is leading to increased rates of coastal erosion, placing hundreds of Alaska communities at the frontline of climate change. Understanding current rates of coastline change and accurately forecasting future changes is critical for communities to mitigate and adapt to these changes. Current modeling approaches typically use a simple linear model based solely on historical coastline positions to measure rates of change and extrapolate them into the future. In doing so, these models fail to capture the dynamic effects associated with decreasing sea ice, increasing annual wave energy, and increasing temperatures. To improve the quality of these coastal models, we need to increase the quantity of digitized coastlines, but the process of manual photointerpretation is slow and laborious.

Current Status: An initial model and pipeline has been developed to automatically extract coastlines from PlanetLabs imagery. The current approach uses a simple Normalized Difference Water Index (NDWI) thresholding technique and a more complex DeepWaterMap algorithm. The DeepWaterMap algorithm was re-trained using finer resolution satellite imagery and two sets of labeled training data. One set of labels is based on a Global Surface Water (GSW) dataset, and the other set of labeled imagery is created from a sliding window NDWI thresholding method. The GSW model training is finished, but there is still more work to be done on the NDWI thresholding method.

Expected Outcomes: A finished model with high accuracy that automatically extracts a vectorized coastline representation from PlanetLabs satellite imagery. Then, the model can be applied to large amounts of imagery to model coastline changes over time.

Required Skills: Python

Code Challenge: Experience with multi-band satellite imagery, geospatial data processing, and machine learning.

Source Code: https://github.com/fwitmer/CoastlineExtraction

Discussion Forum: https://github.com/fwitmer/CoastlineExtraction/discussions

Effort: 350 Hours

Difficulty Level: Medium

Get to know more..

about the projects

- Talk to the mentor(s)
  - Assigned by the organization for each project idea.
  - There could also be “unofficial mentors”
- Mailing lists and archives.
- Issue Tracker
  - Open issues or tickets
    - New features/Requests for Enhancements (RFE)
    - Bugs (easy/difficult and normal/critical)

What makes you *special?*

- Experience
- Your interests and motivation
  - Pick something you really enjoy doing.
- Opportunities
  - What makes you the right person?

Are you willing *to contribute further?*

- Willingness
  - To contribute to the community
  - Beyond the time frame of your internship/summer.

- We want committers, long-term collaborators, and future mentors!
  - Not just contributors for the summer!

Experience

- Language
  - Java, Python, Javascript, Go, C++, C, ..
  - Not much time to learn a new language (?)
- Prove It!
  - "Pull requests."
  - Code challenges.
  - Assist other new potential contributors!!!
  - Project expertise
    - Bug reports and fixes.
    - Go through the archives, wikis, and web sites.

Opportunities..

- Project that matches your previous work experience.
- Choose the right project.
- Timezone Difference
  - Use it effectively
  - Early morning in Alaska. So Alaskans can start early. ☺

Communicate

- Communicate early – but meaningfully.
  - Not necessary to send a message just to say ‘hi’.
- Communicate often.
- Ask **meaningful** questions.
- Answer others' questions!
- Mentors are here to help!
  - (respect)

Some questions mentoring organizations receive

(How to ask better questions).

What is wrong with these questions?

- I am new to GSoC. Please help me get started.

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  - Unclear what help you expect.
- Can you explain the coding challenge?

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- I like to do project idea #4. Please help.
  - Unclear what help you expect.
- Can you explain the coding challenge?
  - Do you want us to paraphrase the whole coding challenge? What do you not understand?

How to improve this question?

- I cannot install the Niffler framework. Please help.

How to improve this question

- I cannot install the Niffler framework. Please help.
  - Where exactly did you get stuck? What is your operating system? Explain the execution environment.

Ask clear, specific questions

- I followed the project idea and achieved the below as a demo. However, the last step is not clear. Does that mean I should clear the database first?
  - Shows effort and progress.
- I compiled Bindaas on Ubuntu 20.04 with Oracle JDK 1.8. However, it fails with authentication failure error message. The full logs are attached here as a text file. What went wrong?
  - Sufficient details included. Even works as a bug report.

How to stand out *(in a good way)*

- Be heard!
  - Quality over quantity.
- Be visible!
- Be responsive!

Apply to GSoC

- Register as a contributor for GSoC.
- Apply on Google's system.
  - Can edit later, until *the last minute!*
- Get the mentors' opinions and improve.
  - Attend to them!!!
  - Some students ask for feedback but never attend to it once given.
    - Don’t do that.

Project Proposal

How to “impress” the mentors/developers?

- Stick to the organization's template.
- **Don’t go all creative on the template.**
  - We are not impressed by how you innovate on formatting.
  - It is annoying when you disregard the provided template.
- Abstract.
- Introduce yourself properly.
  - Focus on the relevant facts.
  - Why do you fit? Your skill sets.
  - List of the pull requests (if any) you have submitted.
  - Highlight if they are already merged!

Project Proposal

- Project Goals
  - Proves you got them correct.
- Deliverables
  - Code, Documentation, test cases, ..
- Description
  - Benefits to the organization and other projects.
  - Can also be given along with the timeline.

Project Proposal

- Timeline
  - Finer details.
  - Break up to periods of 3 - 4 days or a week.
  - Testing takes time.
  - Don't be over-optimistic.
  - Require 35 or 17.5 hours of work per week based on the project type (large vs medium size projects).
- Links
  - References and additional details.

(Sample) Application Template

- Name:
- Email:
- Project Title:
- Synopsis:
  - A short description of your project.
- Benefits to the organization/project
  - and/or other project(s):
- Deliverables:
  - Quantifiable results.

- For e.g., "*At the end of my project, Niffler Metadata Processing Pipeline will be 3 times faster*."
- (Don't make superficial claims. Prove those).

- Project Details:

– A more detailed description of your project:

- Project Schedule:

– How long will the project take?

– When can you begin work?

– Do you know of any planned absences or other major conflicts

- summer classes, vacations, etc.

- Bio:
  - Who are you?
  - What makes you the best person to work on this project?
- Additional Requirements:
  - Pull Requests/ Bug Fixes / Specific requirements for the project.
- Further Related Information

After the submission..

- Don't go invisible!
  - Evaluation is still going on.. ;)
- You may be asked to give more details
  - Bug fixes / pull requests.
  - Demos and screenshots.
- You may even start coding on your project!
  - Especially if you didn't apply for multiple projects. (Remember you can apply up to 3 GSoC Projects).
- Be motivated.

Didn't get selected?

- Not the end of the world. Don't get demotivated.
- If you have put in some genuine effort, you have already learned a lot.
- You can ask the mentors for feedback.
  - Sometimes, they will provide individual feedback.
  - "You were among our top 5 candidates. Unfortunately, Google provided us with only 4 slots this year, and sadly, we had to lose you."
- You can apply next year or to another internship.
  - Or move on to other interesting adventures.

Got Selected? \yay/

- Don't Panic.
- You have one more month
  - to mingle with the developers and the code base.
- More one-to-one interaction with the mentor(s) once accepted!
  - Mentors will be more helpful and available to you.
  - (Because now it is individual mentoring, and mentors want you to succeed.)
- Keep in touch with the developers.

GSoC Community Bonding Period

- Learn more about the organization, the project, and the project idea.
  - Go through the code base
  - Documentation.
    - Coding styles and coding guidelines.
- Communicate often
- Understand the project idea more.
  - Come up with a design.
  - Start with simple fixes and incremental development.

Coding..

Easiest task of all.. ;)

- Commit often if given committership.
  - Send frequent pull requests (daily ?) otherwise.
  - Meaningful Commit messages.
- Get feedback from the mentor(s).
- Keep the community/mentor updated
  - Daily (?).
- Plan for the mid and final evaluations early with the mentor.

Conclude/Continue

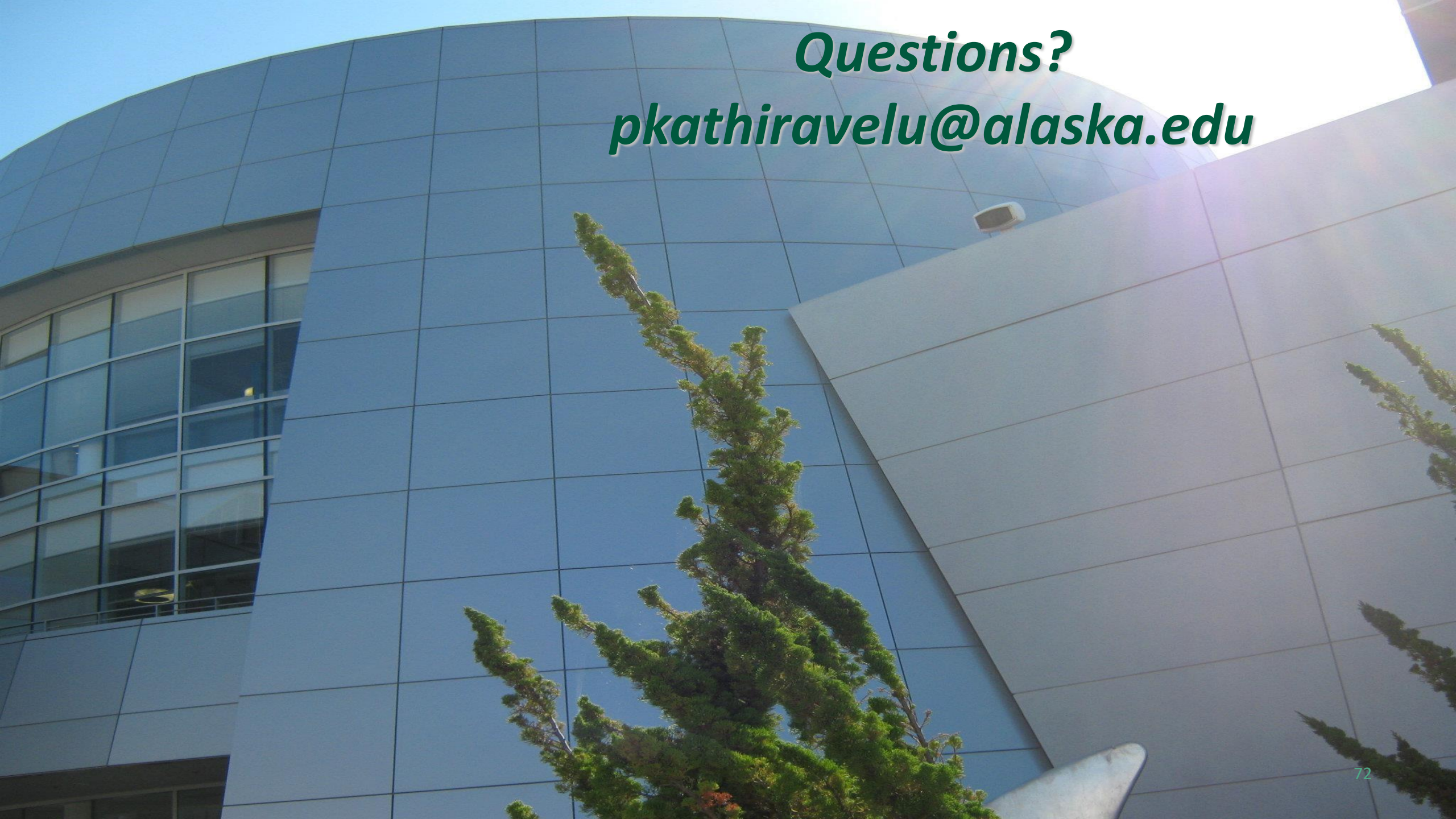
- Final Submission – a link showing your GSoC work
  - If a new project/module can be a link to the source repository.
  - Or a wiki/blog/web page listing/pointing to your exact contributions.
- Don’t miss any of the evaluation deadlines.
  - Submit those at the earliest possible date.
  - Both mentors and contributors must submit evaluations.
  - All 2 of the evaluations!
- Focus on becoming a committer in the organization
  - if not already given committership.
- Keep contributing.

Are you ready?

- Past successful proposals - Wikis, blogs, ..
- Proposal [Pradeeban]
  - GSoC 2015 Emory BMI
  - GSoC 2014 Emory BMI
  - GSoC 2010 OMII-UK/OGSA-DAI
  - GSoC 2009 AbiWord
- Ideas list:
  - Django.
  - Apache Software Foundation
    - More slots and more choices.
    - Join the projects' mailing lists and channels.
      - Apache ShardingSphere, …

For more Information ..

- Join the GSoC mailing lists.
- Check the GSoC official site and blog.
- Join your local GSoC Google Group
  - If there is none for your country or region (Alaska?), you can create one.
  - For e.g., The group for Sri Lankan contributors (now, mostly idling): http://groups.google.com/group/gsoc-srilanka


Questions?
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