

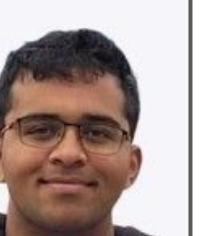
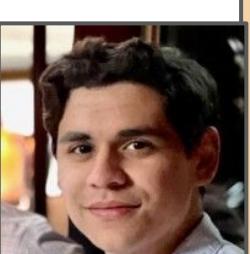
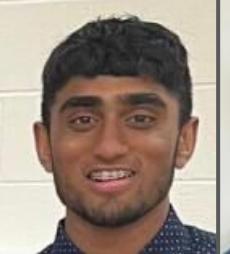
RCOS

Rensselaer Center for Open Source

September 16, 2025

Our Mentoring Crew!

Mentors so far ...

							
dodsoc@rpi.edu @dodsoc	piercet2@rpi.edu @violentasnail	dudduj@rpi.edu	willic21@rpi.edu	shreek@rpi.edu	hebbej@rpi.edu	shaoc@rpi.edu	joship3@rpi.edu
							
balake@rpi.edu	busabn@rpi.edu	vermuly@rpi.edu	sahus@rpi.edu	mccanj2@rpi.edu	liuj43@rpi.edu	marinc9@rpi.edu	thomam13@rpi.edu

Room Assignments

[https://new.rcos.io/small_groups/?semester=20
2508](https://new.rcos.io/small_groups/?semester=202508)

CARNEGIE	101				Mentors
		00026_fabiua	ParadiseOS	2	Anthony
		00002_hermab3	Connection Machine	5	Kevin S
		00078_shreek	MunchiMaps	4	
		00000_chenr19	Project CARPI	3	
		00001_jinnak	Difficulty Spike	4	
		00027_sladec	mslicer	1	
		00028_spellt	Meras	1	
		00096_tarnaa	PAWS	1	
		00107_leeo3	LEGUP	1	
Total	35			22	

CARNEGIE	102				Mentors
		00077_navacb	REX	1	Bulmaro
		00102_gandhn3	EzASM	5	Sagar S
		00041_sahus	OpenPlaybook	2	
		00005_sainid	Desert Cards	1	
		00007_blunte3	LoveLove	1	
		00008_zhaoy24	SimpleIPMI	4	
		00032_voronv	Characters and Creators	2	
		00033_tynanv	Project Kali	1	
		00113_jinb2	AI tutor	1	
			RPI Social	2	
Total	20			20	

CARNEGIE	106			Mentors
	00105_liuj43	Meridian	5	Raven
	00082_murrad6	OED	2	James L
	00115_siui2	Caldarium	6	Yathin V
	00018_vemuly	LumenTact	4	
	00010_linl9	RL4Ising	3	
	00012_giroue2	LibreTunes	1	
	00013_yemula	StudyPlan	1	
	00014_biernp2	Ghidra String Sniper	4	
	00055_lia10	Molecularium	2	
	00071_cellaz	Screenomics	2	
	00092_wua10	Procrastaint	1	
	00068_anandt	Robot-Raconteur	1	
			0	
Total	40		32	

CARNEGIE	113			Mentors
	00009_tianf2	FinGPT Search Agent	2	Jaswanth D
	00043_broadw	LabConnect	4	Connor W
	00098_greend11	Opticos	2	Carolyn S
	00051_mccanj2	Shubble	15	Joel M
	00017_nicold4	Engineer	2	
	00030_kotlab	MarketMind	7	
	00031_joasiy	RPI Dorms	5	
	00039_avgilt	GuardCar	5	
	00052_trebim2	YACS	9	
	00089_wroblw	MageZero	2	
	00090_rollej	EchoPages	2	
	00108_fangj6	DualSub	2	
★	00081_jix5	Standard Market Environment fo	2	
	00054_gramms	Solverah	5	
Total	92		64	

CARNEGIE	201				Mentors
		00075_marinc8	Beekeepr	3	CJ
★		00091_baimej	HackRPI Website Team	5	Heman
★		00095_battir2	Smart Boombox	1	Jacob H
★		00038_wdturner	Soundscape	2	
		00057_lyonsd2	Adaptive Echo	8	
		00059_worobn	DigitalOC	7	
		00060_heinla	PATRIK	7	
		00053_saicha	ctftools	1	
			Secundo	1	
Total	48			35	

CARNEGIE	205				Mentors
		00046_dellag	Such Life	4	Gabe
		00063_thomam13	Needle	4	Mius T
		00110_dodsoc	Easy Artistry	2	Caleb D
		00019_mosquuk	MoveMaster	2	
		00022_foderj	TWC	1	
		00023_lip6	RPI Dorm Room Helper	2	
		00024_karar	Android App	1	
			FlightIQ	5	
Total	20			21	

EATON	216			Mentors
★		00029_songy14	Project Elara RCOS	5 Tim
		00056_matthe	Perlin Noise	2 Christian M
		00069_florer3	RPI Rcade	5 Tylar P
		00097_peterm12	Savery	4
		00065_lansio	The Organ Trail	1
		00066_rafaed	re c	1
		00067_lairdc	Pub Trivia Website	1
		00058_thayas	Electric Fields Visualizer	1
		00025_leej66	Swag	3
		00103_dhanaa	Buy High Sell Low	1
			Forge	2
			Overbooking	2
Total	33			26

CARNEGIE	210			Mentors
★		00086_kapadn	bingo	1 Nilay
		00021_balake	LeetCode Duels	2 Ethan B
		00073_leej64	Fullerene-Atomia	7
		00036_rotat	Run-it	1
★		00048_sweetw2	Spotifydle	2
		00042_chiuk2	Card Battle Game	2
		00084_lawlew2	Talinted Protein Design	3
★		00101_belgan	Stock Market Simulator	3
★		00104_yuh10	AI-Powered Image & Data Catalog	1
		00114_carbod2	OASIS	1

EATON	215			Mentors
	00047_joship3	Genetic Selection Mod	1	Pratheet J
	00117_busabn	VR RCC	2	Nicholas B
	00079_karkhs	CAPY	5	
	00094_zoud	Wind Tempo	6	
	00074_conneg2	Key Capture	2	
	00088_zhangq11	Sentiment Analyzer	5	
	00044_augusc2	optcg-AI	1	
	00045_powers2	anki accessory	1	
	00049_wangcb	Restless	1	
	00050_brahmr	MATA Tune	1	
	00116_edniea	Chelsea Tracker	1	
	00118_dacung	Salud	1	
	00061_shresn2	RPIcentral	1	
	00062_wuw10	MockVue	1	
	00076_parkp2	Lingua	1	
	00083_mistry	YMIME	1	
	00085_palres	LoadLink	1	
	00087_szorco	Diligence	2	
Total	50		34	

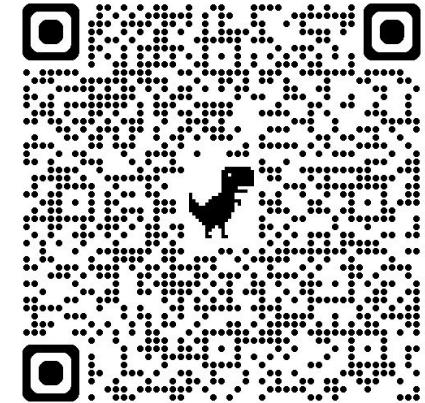
First Small Group

Focus on Getting Your Project Defined!

Top Priority:

If you don't have a team yet, we need to find you one!

- All Pitch Slides can be found at:
 - <https://docs.google.com/presentation/d/1NeWCrJPd8RhVD5CzVTpcnd7439C656A-Akps2pXnPbY/edit?usp=sharing>
- We'll visit this again in a few minutes!



Top Priority:

- You must make sure your project is on Submitty and new.rcos.io along with all your project members
 - If you don't have both you risk losing 10% of your final grade
- If you are having issues, speak with one of the mentors in your room

Otherwise ...

Start Working!

Write Your Proposal

- Today you'll be writing project proposals with your groups
 - If you score at least a **4** you will get full credit for the first 4 classes
- Here are the steps you'll be following:
 1. Project leads: make 100% sure your team on new.rcos.io is fully formed and includes all your members, if not, please add them immediately.
 2. Each project will write the project proposal collaboratively on **one document**, guidelines for project proposals are [here on the RCOS Handbook](#)
 3. The **project lead** is responsible for submitting it, via a Submitty
- **Due Friday 09/19 @ midnight**

Proposal Format

- Proposals should be around 1 page:
 - $\frac{1}{2}$ page of the overall vision
 - $\frac{1}{4}$ page of semester specific goals
 - 2-3 Milestones per student
 - Every milestone should have a nominal completion date
 - Dates can be something like:
 - Week 2
 - End of October
 - Mid-semester,
 - Etc.

Here's a Good Example

You can see the whole thing at:

https://docs.google.com/document/d/1ZfTPK6rJSye5V6QbUEoBLvKcq00EoqR61Gh6Q_cfzk/edit?usp=sharing

We don't expect new projects to be this detailed, but it is something to aspire to!



RCOS

Soundscape Ecosystem

January 30, 2024

Overview

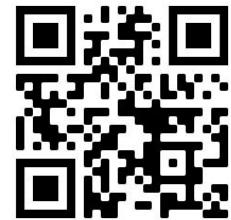
Soundscape is a project founded around the Microsoft Soundscape developed software and repository. In essence, the Soundscape App allowed maps to be annotated with courses and waypoints that were then accessible via an iOS App. The App provided guidance via stereo and tonal sound queues to allow for independent navigation by the visually impaired, or for anyone. Upon Microsoft's decision to end Soundscape and to release it publicly as an open-source project, it was picked up by an international consortium interested in continuing the Humanitarian effort. The effort comprises teams to manage the navigation app (Soundscape for All), create and manage the routes (Soundscape Authoring Tool) and to run the Soundscape Website.

RCOS is actively engaged in all three of these efforts.

Semester Goals

Next Steps - 2

- Repository on Github - <https://github.com/>
 - GitLab works too ...
 - This is flexible
 - You may only need one for everyone to use
 - Most likely, you will have one for the project and a fork or clone for every developer
 - **We will have a workshop on Git soon.**
 - The repository **MUST** have a license
 - **We will have a workshop/bonus session on licensing soon.**
 - The repository **MUST** have a README describing it
 - The proposal works well here
 - Other documentation such as a code of conduct, contributors guidelines, etc. is strongly encouraged.



Next Steps - 2

- Repository
 - GitLab workshop

If you are having problems with this, you can wait until after the git workshop! Do not let it go longer!!

- Other documentation such as a code of conduct, contributors guidelines, etc. is strongly encouraged.



for every

censing soon.

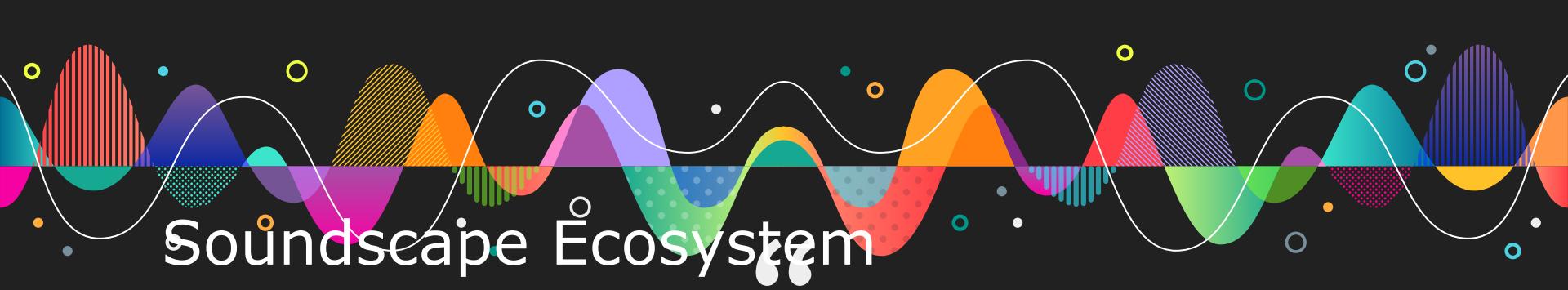
Project Pitches and Discord

All of the projects who pitched, or who pitch today, now have channels in the RCOS Discord, organized by the day they pitched. See

<https://discord.com/channels/738593165438746634/1412516104236175482> for example!

Highlighted Project Pitches

These projects have approached me for additional students. Others are looking as well! Check out **Just Pitches** for everyone who pitched this fall!



Soundscape Ecosystem

Tuning into the world around you

Application/Open Source Ecosystem Team

- Implement CI/CD for Soundscape using GitHub
- Investigate Android Port
- Work on the application including bug fixes

Contact:

- Prof. Turner
 - turnew2@rpi.edu
 - @Prof. Turner#3104

Requirements

- Access to a Mac is useful, but ...
 - We may have this covered!
- You **need** to be flexible!
- **Knowing** Github Actions, Swift, and Python will be useful

Concerto

Ever wonder about the (formerly) blank screens in Lally and Amos Eaton? And possibly elsewhere?

**They are from an old RCOS Project,
Concerto!**

Your mission, should you choose to accept it, is to get Concerto running again!

<https://www.concerto-signage.org/>
<https://github.com/concerto>

**I would love if you got in touch with our
RCOS, Concerto Alumni along the way!**



Contact Prof. Turner
turnew2@rpi.edu

Open Financial LLM Leaderboard

- Maintain a leaderboard on Hugging Face for financial LLMs
- Implementing new features on the Leaderboard page.
- Evaluating state-of-the-art models like GPT-5
- Collecting Reddit, WallStreetBets, and X posts
 - Test whether social sentiment can predict crypto
- **Looking for 3-4 people experienced in LLM research**

Leads: Jaisal Patel (ghostof0days) , Colin Lin (CMU; mirage_c)

Advisor: Xiao-Yang Liu



Model	Average	F1B	F1QA-SA	TSA	Headlines	FONC	FinArg-ACC	FinArg-ARC
GPT4	36.31	78	89	59	86	71	68	48
Geniini	38.35	77	81	37	78	48	31	68
ChatGPT	29.21	78	69	53	77	64	58	39
meta_llama/Llama-2-7Bb	25.79	73	83	57	63	49	58	36
Duaneman-01/YuanYuan-6B-Chat	25.68	74	56	33	65	45	47	68
Open/Open2-7B-Instruct	22.9	52	57	43	69	63	43	53
IbaFinAI/firma-7b-full	21.46	88	79	80	97	49	27	8
ThiLOM/chatglm3-6b	21.24	74	56	35	66	47	25	58
internlm/internlm-7b	20.38	69	81	29	68	36	39	33
meta_llama/Llama-2-7B-chat-hf	19.87	39	76	71	72	35	46	27
mistralai/mistral-8x7b-v0.1	19.36	29	16	59	69	37	39	57

Leaderboard Website:
<https://huggingface.co/spaces/finosfoundation/Open-Financial-LLM-Leaderboard>

Carnegie
Mellon
University



COLUMBIA
UNIVERSITY



THE FIN AI



Chatbot for Registrar's Office

- ❖ Requestor: Rajni Soharu, Registrar (soharr@rpi.edu)
- ❖ Vision: 24/7 personalized support for students—modeled after UAlbany's successful Minerva. Responses to FAQ's and other information provided by Registrar's Office.
- ❖ Key Benefits:
 - 24/7 availability, reduces wait times & bottlenecks
 - Multilingual if possible
 - Secure (FERPA/HIPAA compliant)
- ❖ Features:
 - Natural language interface
 - Live chat fallback to staff
 - Knowledge base + analytics dashboard
- ❖ Success Metrics:
 - >70% high-confidence answers (benchmark: UAlbany)
 - Reduced support tickets & faster response times
 - High student satisfaction (survey-driven)
- ❖ Impact:

the Chatbot modernizes student services, improving accessibility, efficiency, and satisfaction while easing staff workload.



Remember Pertinent Info

Current Progress

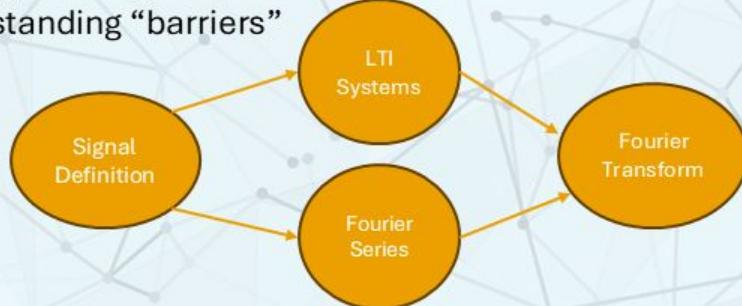
- Newly proposed project open to suggestions!

Goals

- Create a gamified resource for reviewing material from courses
- Two possible usages: actively learning vs retaining
- Easy to use interface for instructors to add questions/topics
- Ability to tie to course scaffold website project
 - Concept based vs course based

Advisor: Kimberly Oakes, oakesk2@rpi.edu

Actively learning: Connected “islands” with understanding “barriers”



Retaining: Concept clusters
Exceed threshold for X islands in cluster to get a “badge”

Learning ROS with Python Turtle

Current Progress

- Website created using Jupyter Book
- Interactive Jupyter Notebooks
- Installation guides for ROS2 Iron
- High-level concept tutorials

Next Steps

- Review current project state
- Add more tutorials
- Tangent: Robot intros for courses

Useful Knowledge

- Python
- Jupyter (Lab, Quiz, Book)
- ROS 2

Advisor: Kimberly Oakes, oakesk2@rpi.edu

The screenshot shows a Jupyter Book interface for a ROS2 tutorial. On the left is a sidebar with a search bar and a table of contents for 'ROS2 Iron' and 'ROS2 Novice'. The main content area features a video thumbnail for 'Capstone Aircraft Robot Example' and a section titled 'Aircraft Robot Arm Control Using ROS2 - Spring 2024 RPI Capstone Team'. Below this is a '1.4. Quiz 1: Introduction' section with a question: 'What does ROS stand for?' and four options: Robotics Operating Simulation, Radio Operating System, Robot Operating System, and Resistive Ohmic Standard.

https://alejandrobc.github.io/ros2-tutorial-book/book/CHAPTERS/ROS2_Iron/01_Introduction_to_ROS2/01_Introduction_to_ROS2.html

Select a Repository of your choice!

DOFBOT-JetsonNANO Repository

The DOFBOT robotic arm utilizes the Jetson Nano to achieve ROS2 compatibility through Python programming. In addition to the powerful Jetson platform, the arm is also equipped with a two-finger gripper and RGB cameras.



ROSMASTER X3 Repository

The Rosmaster X3 is an advanced mobile robot that runs on the Raspberry Pi. This repository contains the software required to control the robot, including its movement, and its connectivity to basic computer vision libraries.



Rasbot V2 Repository

The Rasbot V2 is a beginner-friendly robot car that runs on the Raspberry Pi. This repository contains the software required to control the robot, including its movement, and its connectivity to basic computer vision libraries. This repo teaches students motor control, obstacle avoidance, and basic computer vision using Python.



Dogzilla Repository

Dogzilla is a four-legged robot designed to explore legged locomotion and robotic control. This repository contains the software required to control the robot, including its movement, and its connectivity to basic computer vision libraries. This repo teaches students motor control, obstacle avoidance, and basic computer vision using Python.





Project Elara

Developing not-for-profit space-based energy technologies

The Project Elara Contributors

Rensselaer Polytechnic Institute

Talinted Protein Linker Design

Optimize Structure of Novel Gene Editing System Through:

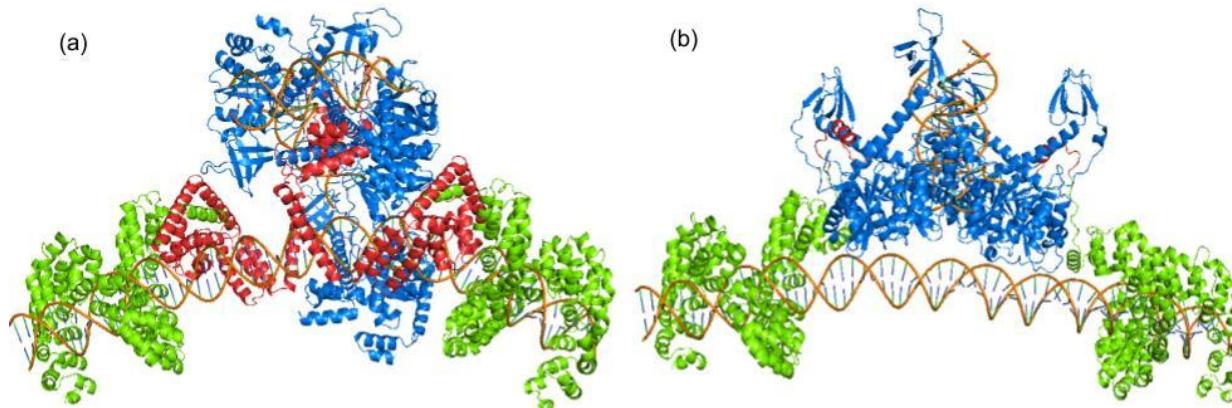
- Iterative protein structure generation
- Molecular Dynamics Simulations
- Docking Simulations

Tech Stack:

- Python
- Shell Scripting
- SLURM
- Etc. as Literature recommends

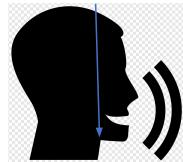
29

Chance to work on NSF ACCESS Supercomputing Cluster!

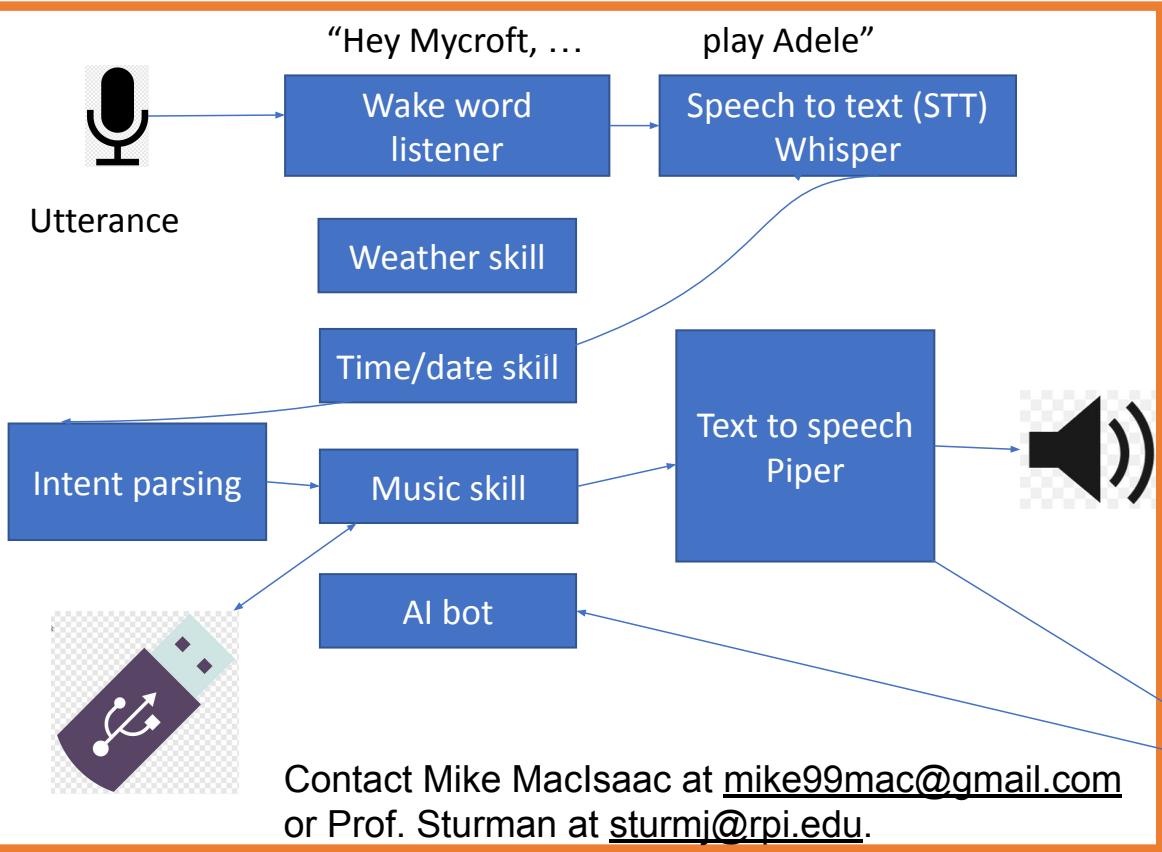


Contact Info:



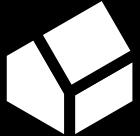


Smart boombox

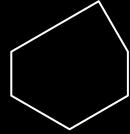


A Smart Boombox:

- Is a Personal Voice Assistant
- With amazing sound
- Play music by voice request from:
 - MP3 files
 - Internet radio stations
 - Streaming sources
- Can bluetooth to phones (no voice cmds)
- Has a Raspberry Pi or Nvidia GPU
- Has many physical controls
- Runs FOSS Python code in Linux
 - Hosted on github
- Allows AI to answer general questions
- Can run offline for total privacy



de^{co}
design community.

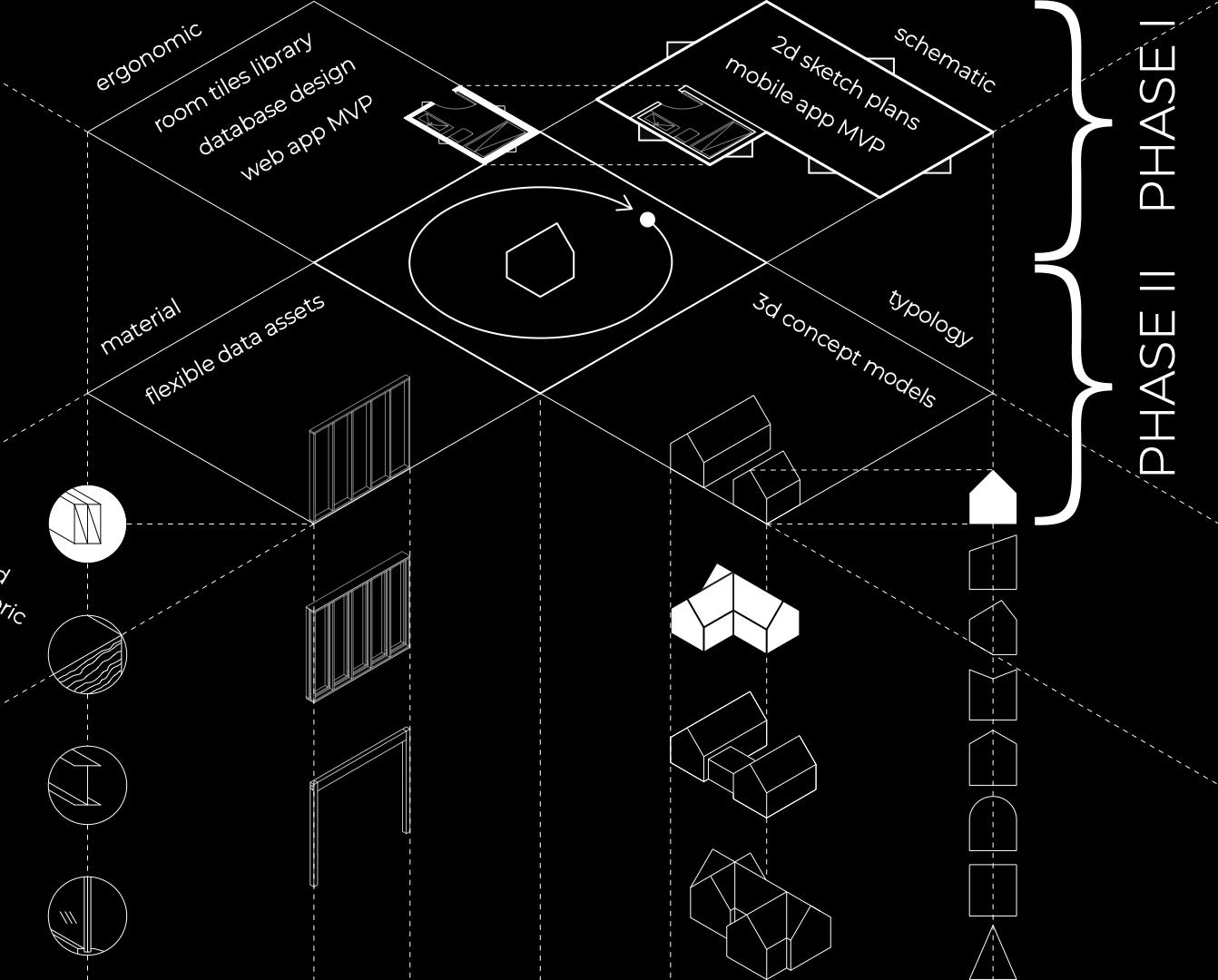


codex
game the system.

seeking a diverse 4-6 person team
to create the future of design+build

PROPOSED TECH STACK

- Frontend
React + Fabric
- State Mgmt
Redux toolkit
- Backend
Node + Firebase
- Database
MySQL + Firestore
- Storage
S3 + Firebase
- Hosting
Railway



PHASE II PHASE I

FORGE WEBSITE

Project Lead: James Chemacki

Project Details:

- Working on the new and improved website for RPI's student-run makerspace
- Tracking and displaying live machine usage
- Calculating user's material usage and billing

Semester Goal:

Be ready to deliver a finished website to the Forge. More updates can be pushed later, but all the core functions should be fully polished by the end of the semester.

GitHub Repo:

<https://github.com/BreadInvasion/forge-new-website>



Stack:

React (TS), Python, Docker

Team Size:

3-5 people

Looking for:

- Some experience
- Clean PRs
- Frontend thoughts?
- People who like stickers

Interested? Contact me at: chemaj@rpi.edu or **kreydev on Discord**

Characters & Creators

A DnD 5e Character Sheet Maker

Project lead: Victoria Voronina

Email: voronv@rpi.edu

Discord: @victoriavoronina

Description:

Website for creating a DnD 5th edition character sheet, because DnD Beyond sucks.

Goals:

- Step-by-step process to create a downloadable character sheet
- Edit existing character sheets on the site
- Bonus: search character sheets for specific info

Stack:

- Javascript, HTML, CSS (site)
- Python (backend/API calls)
- Open to suggestion!

Looking for:

Anyone is welcome, but it's a nice bonus if you have DnD knowledge, graphic design experience, and/or experience with JS/HTML/CSS/Python!

Open Algebra Software for Inferring Solutions

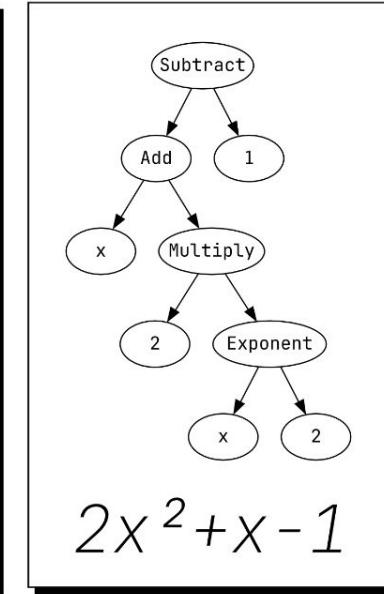
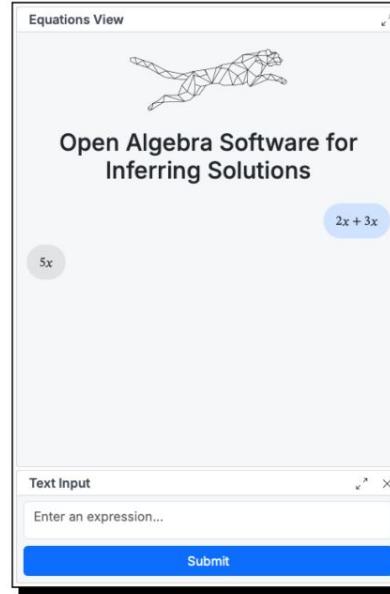
Matthew McCall (mccalm@rpi.edu)

Andrew Nazareth (nazara3@rpi.edu)

OASIS is a C++ library for computer algebra. We represent equations as trees and then transform the trees to perform mathematical operations.

--

Data Structures experience required for working on C++ tasks.



GitHub



Discord



GITHUB ACTIONS FOR POWER AND Z

MICK TARSEL mjtarsel@us.ibm.com

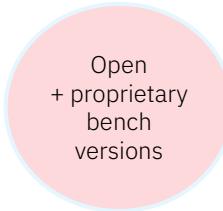


AssetOpsBench

Open-source benchmark for Industry 4.0 automation

<https://github.com/IBM/AssetOpsBench/>

- **Scenarios** – indicative utterances / user inputs for the problems we are working on plus metrics and evaluation criteria (test data set for agentic tools/agents)
- **Agents & tools** – implementations to enable comparisons, especially across models & OOTB capability for ALM
- **Environment** -- static data sets and dynamic simulations (future work) so agents can run complex scenarios with fault injection
- **Test Harness** – system for running agents over scenarios and recording results



- Benchmarking & Leaderboard
- Prompt Optimization
- Synthetic Data Generation
- LoRA Fine Tuning

DHAVAL PATEL <pateldha@us.ibm.com>

Risk Atlas Nexus

<https://github.com/IBM/risk-atlas-nexus>



Contact:

elizabeth.daly@ie.ibm.com seshulir@ie.ibm.com Dhaval.Vinodhai.Salwala@ibm.com ingeveis@ie.ibm.com



OSCAL Compass

OSCAL-COMPASS
Open Security Control Assessment Language
Compliance Automated Standard Solution



Stack: java, scala, C++

Features:

- Native engine of JVM based Spark engine
- Spark most common operator support
- Spark functions support
- Native shuffle implementation
- Data format conversion
- GPU acceleration

Contact: Chengcheng.jin@ibm.com

<https://github.com/apache/incubator-gluten>

<https://www.linkedin.com/company/apache-gluten>



Attendance

Make sure you enter your Attendance on the
RCOS site before you leave **TODAY!**