Purdue Chapter
Association for Computing Machinery

President: Nikolas Ogg
What is ACM?

A collection of groups focused on fields in computing
- Game Development
- Artificial Intelligence
- Robotics
- Etc...

Host Special Events
- Company Tech Talks
- Help Sessions
- Student led Talks
- Programming Competitions
- Hackathons
Linux Installfest

Partnered with Purdue Linux Users Group (PLUG)

Helped students install Linux on their personal computers

Sponsored by EMC Isilon
High School Coding Competition

Simple coding questions (think FizzBuzz)
Talk to students about CS and Purdue
Learn about competitive programming
Last Year (Fall): WikiCrawler
Last Year (Spring): Chess A.I.

MiniMax
Alpha Beta Pruning
Transposition Tables
Hackathon Competition
This Year (Fall): Snake A.I.

- Heuristic graph searching
- Grid Clutter
  - L-shape vs direct path
  - Head → Tail vs Head → Food
- Prioritize living
This Year (Spring): Soccer AI

We have been using C# to write a basic Soccer Engine.

Implemented basic player strategies:
stay still, seek, pursue.

Using these player strategies to implement team strategies:
passing, spreading out, marking players, and ultimately scoring a goal.
Last Year (Fall)

Purdue Laundry Android App

GET IT ON Google Play
This Year (Spring)

Fixing problems in the Laundry App

- Server was hosted on Heroku (slow to startup)
- Information about machines was not cached (slow responses)
- No log management or server monitoring set up (how do we know the server is failing?)
- No analytics on how users actually use the app
- All machines at a location are sometimes offline, the UI should reflect that
Beefing up the Sever

- Move Server to AWS (No more slow startup times)
- Use Redis to cache the response from the API with a TTL of 60 seconds
- Refresh the cache every 60 seconds (fast responses!)
- Move the redis server and the API server to docker containers to make it easier to deploy
Monitoring the Server

- All Server Logs get sent to a service called Loggly
- Loggly will send out emails when certain errors occur
- The servers are monitored by a service called DataDog
- We can see how much Memory is allocated, the TX/RX of the server, and even Redis stats!
Tracking Analytics

- Monitors when users
  - Click on a Certain Location
  - Set a Reminder
  - How long they spend on each screen
- Monitor status of Machines
  - What percentages of machines are offline?
The updated App

- Minor visual updates
- Better progress dialogs for the user
- Informing the user when machines are brought offline.
  - Locations now appear “grayed out” when all the machines in that location are offline
- On our end, we are tracking how many machines are in use across campus at all times.
Uproar: Explore your community

- A chat application similar to YikYak
- Rather than a conversation based chat, Uproar’s messages are tied to **GPS coordinates** rather than chat rooms.
  - When a new message is sent, all users within a small radius of the message receive the message
- Users can see clusters of messages and topics being discussed in those clusters
The Uproar Backend

- We wanted to teach members the power of backends
  - Main server, in Scala, existed as a reference server for students to test their own servers functionality
  - Other members wrote a server in Node.js to try and copy the functionality
- The message pushing was implemented using PubNub
  - A pub-sub service provider
- Use RethinkDB
  - Great support for geospatial queries!
Uproar - Clustering Topics

- We want the app to **encourage people to explore areas around them**. To do this we want to direct people towards conversations about topics they are interested in.
  - We determine topics in clusters with NLP (Natural Language Processing)
  - We broadcast all messages to our NLP service which will...
    - use MonkeyLearn or Apache NLP to find categories the message falls into
    - store these associated categories along with the message in the database
SIGBOTS
Special Interest Group for Robotics
This Year’s Game: VEX Nothing But Net

Point Structure:
- Ball Behind Bar
  - Yellow - 1pt
  - Orange - 2pt
- Ball In Net
  - Yellow - 5pt
  - Orange - 10pt
- Auto bonus - 10pt
- Lifting
  - Low (>6’) - 25pt
  - High (>12’) - 50pt

Caveat: robots cannot expand
Initial Design Ideas

Launchers

- Flywheels (Nerf guns)
- Slingshot

Drivetrain

- Use refined H-drive from last year
- Holonomic drive

Software

- Launch all match loads (30)
- Coordinated lifting
New Tools - 3D Printing

Unlimited number of 6”x6”x3” parts allowed this year

LulzBot TAZ 5 Printer

Used extensively in the launching system
New Tools - Phabricator

Industry software management tool

Issue tracking, code reviews, ticketing system
Final Robot Designs

Newton
(Flywheels - 15”x15”)

Rock‘Em Sock‘Em
(Puncher - 15” x 15”)

Kepler
(Flywheels - 24”x24”)
Qualifier Competition

Held February 20th, 2016

Largest competition yet - 10 teams!
VEX U World Championships

Louisville, KY from 4/20 to 4/23

Focusing on the autonomous challenge

60 seconds

Score for any color

Rock 'Em Sock 'Em - estimated 300 points
Who We Are
Past Projects

20,000 Leagues Over the Sea

Space Salvage
Past Events

SIGGD Game Jam - Fall 2015

48 hour hackathon

16 participants

Global Game Jam - Spring 2016

http://globalgamejam.org/2016/jam-sites/purdue-university/games
Current Project

Grappling Hook Fighters (for lack of a better name)

Multiplayer/LAN fast-paced platformer shooter

Gameplay influences from Super Smash Bros, Duck Game, and a mixture of other indie games

Art influences from DnD/Fantasy themes

Base of programming down, polishing and gameplay testing/balance to follow
For the Future

Fall Game Jam - Sept. 16th - 18th

Enter Grappling Hook Fighters into the 2017 Independent Games Festival Global Game Jam - Jan. 20th - 22nd