

APPALACHIAN STATE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES

Computer Science

Beyond the Bachelor's

Dr. Mitch Parry

Today's presentation

- Why a Master's degree in Computer Science?
- Requirements for the Master's degree
- Accelerated admission
 - You can complete the Master's degree in only one extra year!
- Project vs. Thesis

Why a Master's Degree in Computer Science?

- Money

- In 2021, Bureau of Labor and Statistics reported the median salary for Computer and Information Technology occupations to be \$136,600 for those with a Master's degree in Computer Science
 - This is \$30,000 higher than the median salary for those with only a Bachelor's in CS

- Opportunity

- You'll be more marketable and that Master's Degree might help you get that dream job
- 95% of our graduates are employed in the discipline within 6 months of graduation

- Experience

- You'll be better prepared for the workforce, and
- Have better opportunity for advancement

- Funding

- Almost all of our graduate students are funded
- Assistantships cover in-state tuition plus \$5000 living expenses

Requirements for the Master's degree

- Three Core Area Courses
 - Design and Analysis of Algorithms
 - Operating Systems
 - Software Engineering
- Nine hours in an approved concentration
 - Data Science and Visual Computing
 - Systems
 - Theoretics
 - Web & Mobile
- Thesis (9 hours) or Project (3 hours)
- Total of 36 hours of approved course work

- Time to degree: about 1.75 years

Accelerated Master's Program

- Up to twelve hours of graduate courses taken during senior year count toward undergraduate and graduate degrees
 - $36 - 12 = 24$ hours remain to complete graduate degree
 - typically two semesters and a summer
- Application requirements are easier
 - GRE not required
- GPA must be a minimum 3.2 when in the undergraduate degree for the graduate courses to dual count
- Time to degree: about 1 year

Decelerated Master's Program (those without CS degree)

- Tailored program of study depending on prior experience
- Programming proficiency: 11 hours in two semesters (or previous degree)
- About 15 hours of undergraduate CS prerequisites
- 36 hours graduate coursework (standard program)
- Time to degree: about 2.5-3.0 years depending on programming experience
- Students are eligible for assistantships once they succeed in undergraduate coursework

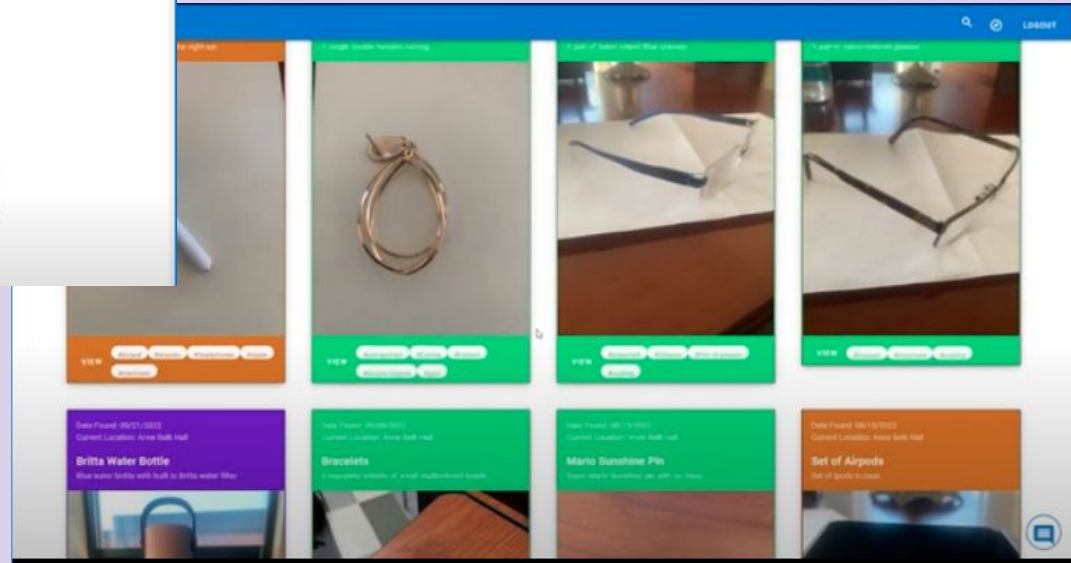
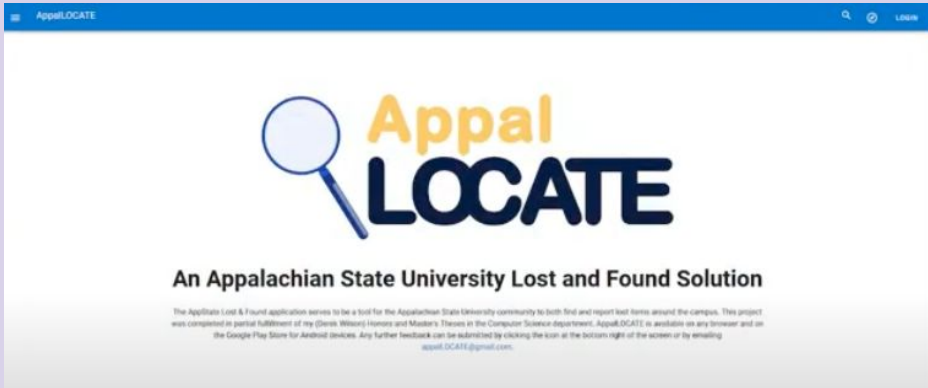
Project versus Thesis

- Student chooses the project or thesis topic
 - Faculty will often help guide this process
- Typically both the project and the thesis will require the design and implementation of software
 - However, sometimes the thesis topic requires the use of others' software for experimentation and study
- Thesis requires research and writing
 - What is the related work?
 - What questions is the research trying to answer?
 - How does the research answer these questions?
- Thesis often leads to a publication

If your ultimate goal is a PhD in any area, the thesis will provide valuable insight into that process.

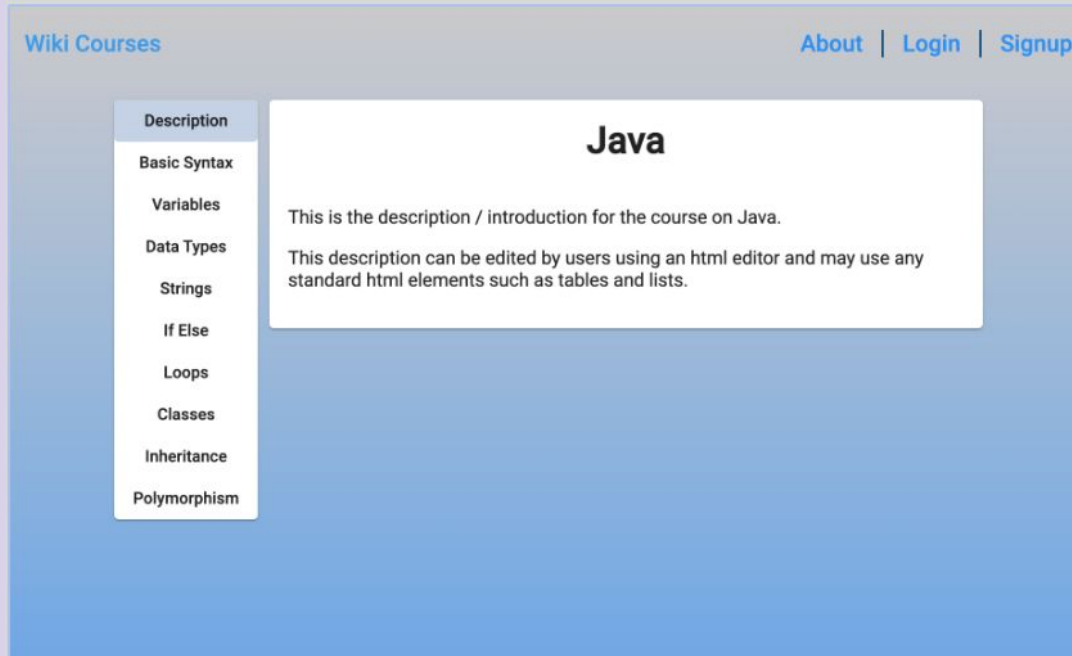
Recent Master's Thesis

Derrick Wilson (May 2023) - Appal LOCATE: A Lost and Found Solution



Recent Master's Thesis

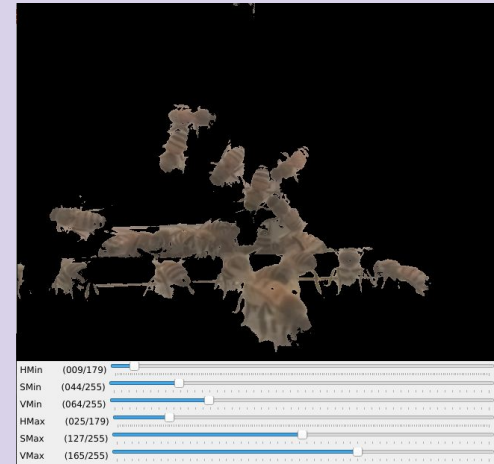
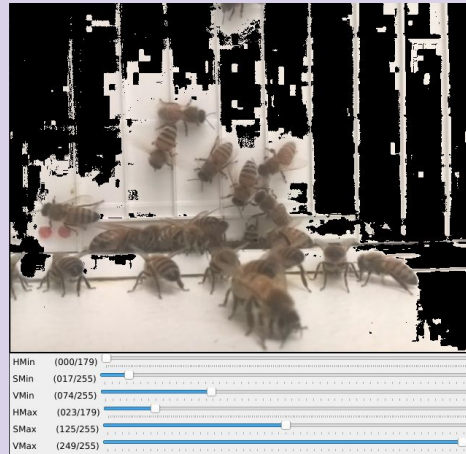
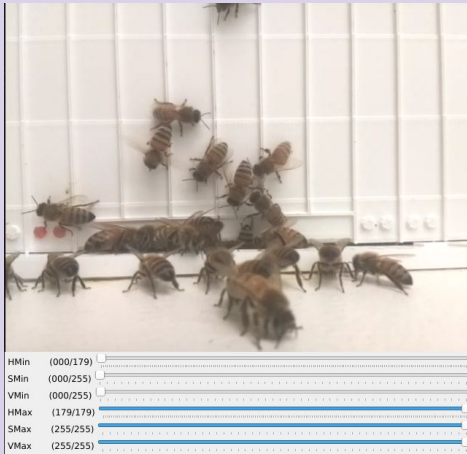
Willow Sapphire (May 2022) - The Design and Implementation of a Teaching Wiki



The screenshot shows a web interface for a teaching wiki. At the top left, the text "Wiki Courses" is displayed in blue. At the top right, there are three links: "About", "Login", and "Signup", separated by vertical bars. On the left side, there is a vertical navigation menu with the following items: "Description" (highlighted in a light blue box), "Basic Syntax", "Variables", "Data Types", "Strings", "If Else", "Loops", "Classes", "Inheritance", and "Polymorphism". The main content area is a white box with a blue border. At the top center of this box, the word "Java" is written in a large, bold, black font. Below the title, there are two paragraphs of text. The first paragraph reads: "This is the description / introduction for the course on Java." The second paragraph reads: "This description can be edited by users using an html editor and may use any standard html elements such as tables and lists."

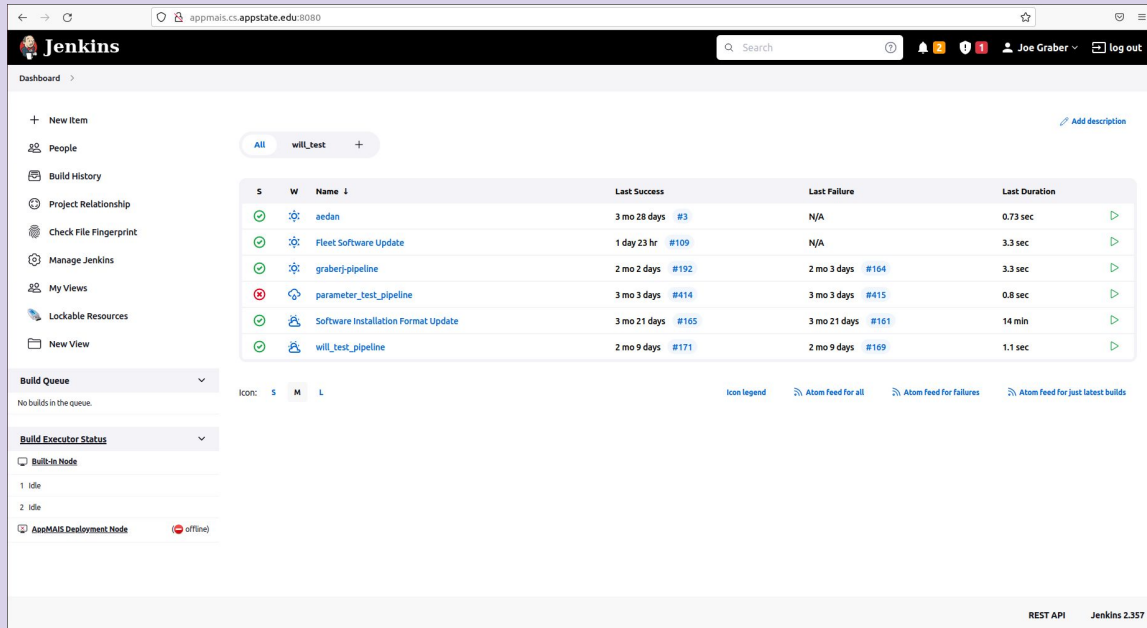
Recent Master's Project

Curt Bridgers (August 2023) -Towards Accurate Bee Arrival and Departure Counts Using Mixture of Gaussian Based Background Subtraction



Recent Master's Project

Joe Graber (August 2022) - Jenkins for AppMAIS (Honey Bee Monitoring System)



The screenshot shows the Jenkins dashboard interface. The top navigation bar includes the Jenkins logo, a search bar, and the user name 'Joe Graber' with a 'log out' button. The main content area displays a table of recent builds for the 'will_test' pipeline. The table has columns for status (S), workflow (W), name (L), last success, last failure, and last duration. The builds are listed in descending order of time.

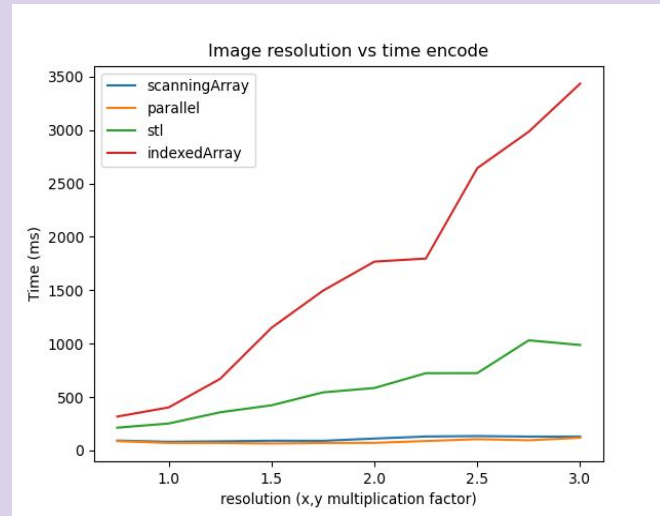
S	W	Name L	Last Success	Last Failure	Last Duration
✓	⚙️	aedan	3 mo 28 days #3	N/A	0.73 sec
✓	⚙️	Fleet Software Update	1 day 23 hr #109	N/A	3.3 sec
✓	⚙️	graber-pipeline	2 mo 2 days #192	2 mo 3 days #164	3.3 sec
✗	⚙️	parameter_test_pipeline	3 mo 3 days #414	3 mo 3 days #415	0.8 sec
✓	⚙️	Software Installation Format Update	3 mo 21 days #165	3 mo 21 days #161	14 min
✓	⚙️	will_test_pipeline	2 mo 9 days #171	2 mo 9 days #169	1.1 sec

Below the table, there is an 'Icon legend' and several 'Atom feed' links for all, failures, and latest builds. On the left sidebar, there are navigation options like 'New Item', 'People', 'Build History', and 'Build Queue'. The 'Build Queue' section shows 'No builds in the queue'. The 'Build Executor Status' section shows '1 idle' and '2 idle' executors, and 'AppMAIS Deployment Node' is marked as 'offline'.

REST API Jenkins 2.357

Recent Master's Project

Andrew Pobrca (May 2023) - Parallelization of inserting and extracting messages hidden in images



Department Fast Facts

- Academic Programs
 - Bachelor's of Science, ABET accredited, 600 students, 110 graduates/yr
 - Master's of Science, 25 students, 10 graduates/yr
 - Data Science Certificate, 30 students
- Engaged Faculty
 - 19 funded grants, > \$5 million over last 7 years
 - 20 faculty members
- Program began in mid 1970s, became department in 1998

Questions?

- Also don't forget to visit these rooms:
 - **Undergraduate Program in room 310**
 - Learn why you should get your Bachelor's degree in CS here at App State
 - **Reaching Higher in room 325**
 - Earn an extra, highly marketable, credential in Data Science
 - Take graduate courses that can count toward the Master's degree and graduating with honors
 - **Student Success in room 327**
 - Extra curricular activities help our students succeed!
 - Get the student perspective of our program!
 - **Student Research Lab in room 312-W**
 - See what research some of our students are working on!