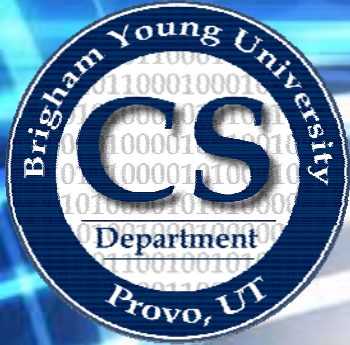


The background is a dark blue gradient with several glowing, semi-transparent blue lines and curves that create a sense of motion and depth. The lines are most prominent on the left side, where they curve and intersect, and then extend horizontally across the middle of the image. The overall effect is reminiscent of a digital or data visualization theme.

# Computer Science

at Brigham Young University



# The Department

- Housed in the College of Physical and Mathematical Sciences
- Undergraduate student-faculty ratio: 15:1
- 29 full-time faculty, 430 undergraduate students
- 17 research labs
- 14 open labs for CS students with 7,770 square feet of lab space and nearly 360 work stations
- Department Chair: Parris Egbert
- Undergraduate Advisor: Paul Roper
- Undergraduate Program Assistant: Kiersten Nielsen  
3361 TMCB, 422-9439, [kiersten@cs.byu.edu](mailto:kiersten@cs.byu.edu)

# The Discipline

- Creating software and high-level programs
- Study of the algorithmic processes—their theory, analysis, design, efficiency, implementation
- Problem solving—discern the correct model for a problem and devise the right computer manipulations to solve it
- Create programs responsible for everything from the control of kitchen appliances to sophisticated climate models used in predicting future environmental change. All industries are dependent on technology. Which will you decide to influence?
- Strong background in mathematics, algorithms, and data structures allow students to create programs which will solve problems in business, science, and entertainment.

# Curriculum

- **The Core**

- Students learn mathematics, science, data structure design, theory, computer architecture, operating systems, advanced programming

- **Electives**

- Computer graphics, interface software, networks, security, artificial intelligence, machine learning, verification/validation, distributed systems, software design, signal image processing, models and optimization

- **Emphases:** Bioinformatics, Animation

- **Languages:** Java, C, C++, C#, Python, PHP...among others

# Suggested Program Timeline

1 <sup>st</sup> - CS 142 - Math 112 - Science Elective 2 <sup>nd</sup> - CS 124 - CS 235 - Math 113	1 <sup>st</sup> - CS 236 - Math 343 - Phys 121 2 <sup>nd</sup> - CS 240 - CS 252 - Physics 220 - Stat 321 or 221	1 <sup>st</sup> - CS 312 - CS 340 - CS 345 - English 316 2 <sup>nd</sup> - CS 330 - CS 360 - CS 404 - CS Elective	1 <sup>st</sup> - CS Elective - CS Elective - Science Elective 2 <sup>nd</sup> - CS Elective - CS Elective
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Freshman

Sophomore

Junior

Senior

- Experiment—discover your interests
- Network
- Research

- Decide on a career track to pursue
- Continue to build personal portfolio
- **CS 240 Interview**
- Network
- Research
- Optional Internship

- **Internship**
- Sept.– begin to apply
- Nov.-Feb.– interviews
- Continue to build personal portfolio
- Network
- Research

- Career Search
- Sept.– Job Fair
- Nov.-Apr.– interviews
- Apr. – Hiring
- Finish Portfolio
- **Senior Exit Interview**
- Network
- Research

## 2 Important Events

- **240 Interview:** Students are prohibited from registering for 300- and 400-level courses until they have a) passed CS 240 with a C- or above or b) passed two thresholds in the course—passing the first programming exam and passing the first programming project with a 70% or above. Students must then set up a time to meet with the undergraduate program assistant for a short interview before being cleared to register
- **Senior Exit Interview:** Before graduating, all students must meet with the undergraduate faculty advisor and the undergraduate program assistant for a short interview. Failure to complete the interview will result in an incomplete mark on the student's transcripts and a delay in the posting of the student's diploma. Students will be notified of their interview time approximately one month before graduation.

# CS 598R

Student may use one 500-level CS course to fulfill an upper-level elective requirement. CS 598R, a mentored research course is an option that many students consider.

CS 598R allows students to work in a small group with a faculty advisor on cutting-edge research projects. At the end of the semester, students showcase their research and compete for prizes at a Demo Day Competition.

Past projects include 3D video game programming, bioinformatics research into Downs Syndrome, family history, robotics, software engineering, natural language processing, and computer-generated graphics, to name a few.

Projects are announced at the beginning of each fall and winter semester. Students may attend to learn about the projects offered and sign up to participate.

# Optional 400-Level Tracks

Students wishing to tailor their academic experience to their individual interests may follow one of the optional 400-level “track,” designed to give a deeper background in a particular area of the discipline.

## **Graphics and Image Processing:**

Background—431, 460, 478; Specialty—450, 455, 456, 557

## **Systems/Networking:**

Background—428, 450; Speciality—431, 460, 462, 465

## **Application Development:**

Background—431; Specialty—428, 452, 456, 462

## **Artificial Intelligence:**

Background—431, 450, 460; Specialty—470, 476, 478, 486

## **Verification /Validation and Software Engineering:**

Background—431, 456, 478; Specialty—428, 452, 486



# Resources

- **Mentored Research:** Computer graphics, computational sciences, data engineering, data mining, human centered machine learning, software model checking, neural networks and machine learning, interactive computing, IDeA Labs, internet security, natural language processing, and more...
- **Clubs:** ACM, Cocoa Heads, Gaming, Ruby Users Group, Unix Users Group, Women in Computer Science
- **Physical Resources:** 14 open computer labs, student web space, MSDN software, computer support personnel, student accounts.



A few. . .

## Cool projects

- Unmanned Aerial Vehicles (UAV):  
Create software to allow small planes search for missing persons in wilderness areas
- MousePuter:  
How would computing change for you if your PC fit into the palm of your hand?
- 3-D Animation:  
CS students worked on the award-winning films Lemmings, Faux Pas, Pet Shop, Turtles, Noggin, Pinatas, and Pajama Gladiators with the Animation Department
- Simple Authentication for the Web  
Don't let your work on the web be hampered by dozens of passwords and usernames. SAW increases security and reduces complications.

# CS Industry Salaries

- U.S. Bureau of Labor Statistics
  - Computer Scientist.....\$85,190
  - Software Engineering.....\$74,980
  - Computer Programming.....\$62,890
  - Database Administration.....\$60,650
  - Systems Administration.....\$58,190

<http://www.bls.gov>



# How to get a GREAT job:

- Minor in a subject of interest
- Create a portfolio
- Attend career fairs and information sessions
- **Complete an internship**

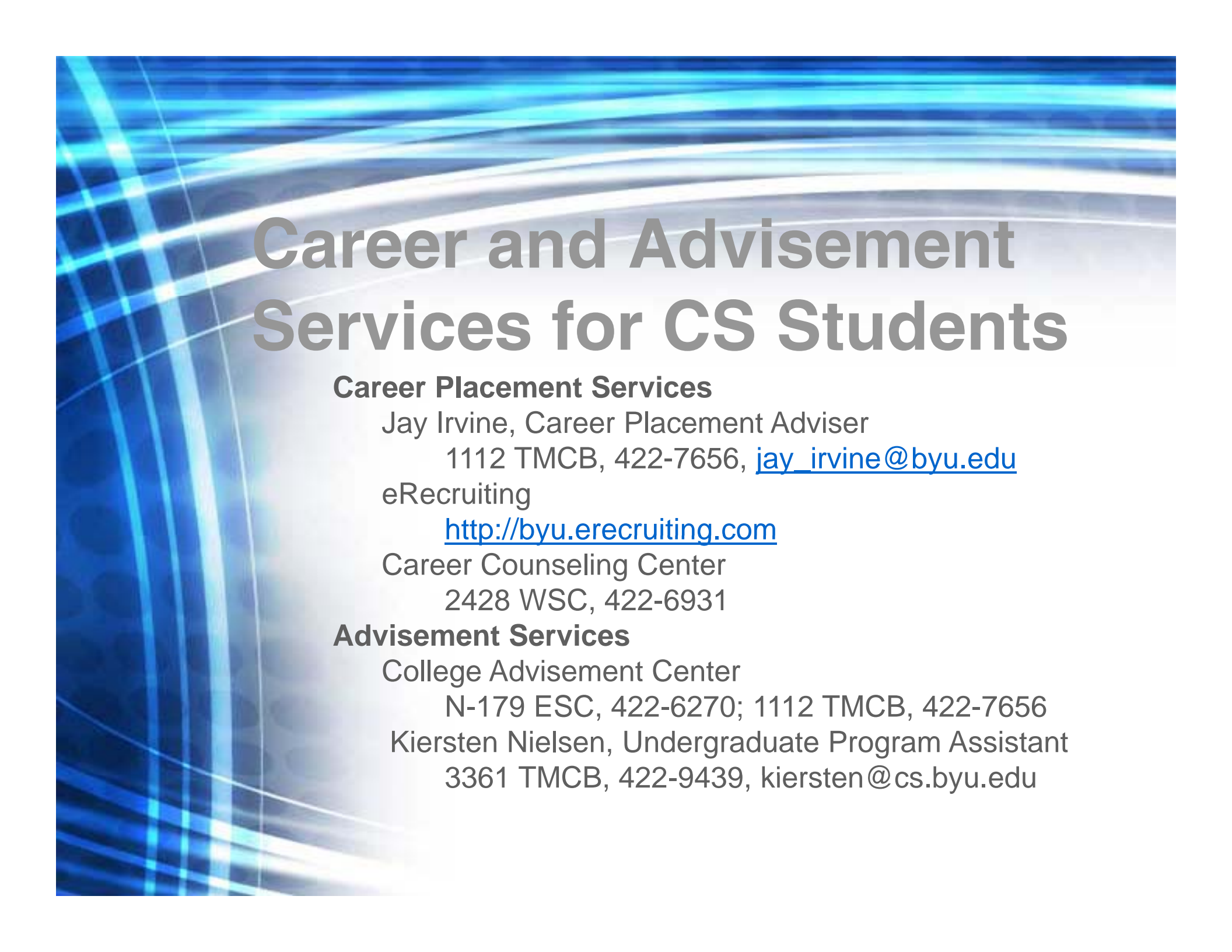


# Advice from the experts:

“The nature of these jobs is not just closing your door and doing coding...in fact, the greatest missing skill is somebody who’s both good at understanding the engineering and has good relationships with the hard-core engineers and bridges that to working with customers and marketing.”

-Bill Gates

Translation: combine your technical skills with communication and business management skills to become an invaluable asset to your employers or to succeed as an entrepreneur yourself. The Tanner Building is next door and the Math and Stats Departments are just down the hall— why not try a minor?



# Career and Advisement Services for CS Students

## **Career Placement Services**

Jay Irvine, Career Placement Adviser

1112 TMCB, 422-7656, [jay\\_irvine@byu.edu](mailto:jay_irvine@byu.edu)

eRecruiting

<http://byu.erecruiting.com>

Career Counseling Center

2428 WSC, 422-6931

## **Advisement Services**

College Advisement Center

N-179 ESC, 422-6270; 1112 TMCB, 422-7656

Kiersten Nielsen, Undergraduate Program Assistant

3361 TMCB, 422-9439, [kiersten@cs.byu.edu](mailto:kiersten@cs.byu.edu)