2010 Computer Science Department Undergraduate Student Meeting
Meeting Agenda

- introduction of faculty
- overview of computer science undergraduate degree programs
- overview of minor in computer science
- general advice and suggestions
- ACM and ACM-W
- feedback from students
Computer Science Faculty

- Sudhir Aggarwal: CNT4406, COT4420
  - computer networks, digital forensics
- Ted Baker: CEN4020, CEN4021, COP4020
  - real-time systems, device drivers
- Mike Burmester: CIS4360, CNT4406
  - cryptography, computer security, network security
- Daniel Chang: CDA3100, CDA3101, CIS4250, CIS4930
  - legal/ethical issues in CS, applied computer security
- Zhenhai Duan: CNT4406, COP4342, COP4530
  - computer networks, multimedia, performance evaluation
Computer Science Faculty

- David Gaitros: CEN4020, CEN4021, COP4710
  - software engineering, database systems
- Lois Hawkes:
  - computer networks, fault tolerance, tutoring systems
- Piyush Kumar: CIS4930, COP4531
  - algorithms, computational geometry
- Chris Lacher: several DL/Panama City courses
  - machine learning, neural networks, geometric topology
- Randolph Langley: CIS4930, CNT4603, COP4342
  - system administration, network management
Computer Science Faculty

- Feifei Li: COP4710
  - security/performance of database systems
- Xiuwen Liu: CAP4730, COP3353, CDA3100
  - computer vision, image processing, artificial intelligence
- Michael Mascagni: COP4531, COT4420
  - Monte Carlo methods, random number generation
- Robert Myers: COP3014, COP3252, COP3330, COP3353
  - Java, object-oriented programming
- Daniel Schwartz: COP3252, COP4710, COT4420
  - logic programming, expert systems
Computer Science Faculty

- Ashok Srinivasan: CIS4930, COP4530, COP4531
  - high performance computing, parallel algorithms
- Ann Tyson: COP3014, COP3330
  - methods for teaching programming and debugging
- Gary Tyson: CDA3101, CDA4150, CIS4930
  - computer architecture, embedded systems
- Robert van Engelen: COP4020, COP4610
  - high performance computing, compilers, XML
- Andy Wang: COP4610
  - file systems, operating systems, performance evaluation
Computer Science Faculty

• David Whalley: CDA3101, COP4020, COP4342
  – compiler optimizations, embedded systems
• Xin Yuan: COP4530, COP4610
  – computer networks, high performance computing
• Zhenghao Zhang: CDA3100, CNT4504
  – computer networks, performance analysis
Computer Science Department Undergraduate Degrees

- BS in Computer Science
  - 293 majors
- BA in Computer Science
  - 37 majors
- Computational Biology
  - 14 majors
- Computer Criminology
  - 98 majors
BA in Computer Science

Undergraduate BA in Computer Science Flowchart
Draft v 1.0 – 9/12/2009

Arrows indicate prerequisite – "co" indicates corequisite (the classes may be taken simultaneously)

MAC1105 (3)
College Algebra

MAC1140 (3)
Precalculus

MAD2104 (3)
Discrete Math I

STA2122 (3)
Introduction to Applied Statistics

COP3014 (3)
Programming I

COP3353 (1)
Intro to Unix

COP3330 (3)
Object Oriented Programming

CEN4020 (3)
Software Engineering I

COP4710 (3)
Theory and Structure of DB

COP4530 (3)
Data Struc, Alg’s and Gen Progr

CDA 3100 (3)
Computer Organization I

CEN4021 (3)
Software Engineering II

COP4020 (3)
Programming Languages

COP4610 (3)
Op Sys & Conc Programming

CDA3101 (3)
Computer Organization II

A&S Requirements
Foreign Lang I (4)
Foreign Lang II (4)
Foreign Lang III (4)
History (3)

 Humanities (9)

CS Electives
CS Prog Lang Elective (3)

CXX 4xxx Elective (3)

CXX 4xxx Elective (3)

Note: BA in CS students must also select a minor.
Recent CS Electives

- recent general CS electives offered on main campus
  - CAP 4730 Computer Graphics
  - CDA 4150 Computer Architecture
  - CIS 4360 Introduction to Computer Security
  - CIS 4930 Cybercrime Detection and Forensics
  - CIS 4930 Kernel and Device Driver Programming
  - CIS 4930 Mobile Programming
  - CIS 4930 Parallel Programming on Multicore Processors
  - CIS 4930 Website Architecture
  - CNT 4406 Network Security and Cryptography
  - CNT 4504 Introduction to Computer Networks
  - CNT 4603 Computer & Network System Administration
  - CNT 4504 Introduction to Computer Networks
  - COP 4813 Web Applications Programming
Recent CS Electives (cont.)

- recent programming language CS electives offered on the main campus
  - COP 3252 Internet Applications Programming with Java
  - CIS 4930 C#
  - CIS 4930 Python Application Development
CS Majors Still Getting Jobs

- CS job openings far exceed number of CS graduates.
CS Majors Still Getting Jobs (cont.)

- employers of CS graduates from last 2 years
  - Lockheed Martin: Orlando, FL
  - Harris: Melbourne, FL
  - Cerner: Kansas City, MO
  - Infinity Software: Tallahassee, FL
  - Naval Surface Warfare Center: Panama City, FL
  - Nuance Communications: Melbourne, FL
  - Starwood Vacation: Orlando, FL
  - Motor Carrier Compliance, DOT: Tallahassee, FL
  - IIW Inc: Tallahassee, FL
  - Valencia CC: Orlando, FL
CS Majors Still Getting Jobs (cont.)

- Hewlett Packard: Tallahassee, FL
- BookIt.com: Panama City, FL
- DoD: Maryland
- Health Corporation of America: Nashville, TN

- average starting salary in mid $50K-$60K
CS Electives for Computational Biology

- CS elective options for computational biology
  - CDA 3101 Computer Organization II
  - COP 4531 Complexity & Analysis of Data Structs & Algs
  - COP 4710 Theory and Structure of Databases
  - COT 4420 Theory of Computation
Why is computation MISSION CRITICAL to biological research?

• We are entering a new age
  – High throughput science vs. boutique science
  – Moore’s law application to biology
  – Major centers had computation and analysis pipelines
  – Boutique scientists have caught up with respect to technology but not analysis
  – People like you work to fill that analysis-gap
Until ~5 years ago 90% all massive biological datasets came from 4 places

BROAD INSTITUTE

wellcome trust SANGER institute

HUMAN GENOME SEQUENCING CENTER

THE Genome CENTER AT Washington University
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The number of transistors that can be placed inexpensively on an integrated circuit has doubled approximately every two years. The trend has continued for more than half a century and is not expected to stop until 2015 or later.
THE AMOUNT OF BIOLOGICAL DATA THAT CAN BE GENERATED IN A SINGLE EXPERIMENT has doubled approximately every two years. The trend has continued for more than TEN YEARS and is not expected to stop ANYTIME SOON.
High throughput science is now available to ALL scientists

• We are entering a new age
  – High throughput science vs. boutique science

!!! THIS TREND MAKES HIGH-THROUGHPUT SCIENCE AVAILABLE TO ALL SCIENTISTS !!!
Who has access to these high throughput technologies

- Large Universities and Medical Schools
- Small Universities and Medical Schools
- Huge pharmaceutical companies
- Small startup biotech companies
- Medical practices
- Government agencies local and federal
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A few areas where technology advances outpace analysis advances

- $1000 genome
- Fluorescence microscopy
- Protein ID
- Gene splice form ID
- New modes of regulation
- Interaction networks
- Microbial ecology
- Epidemiology
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**Figure:** MicroRNA machinery

1. A microRNA gene is transcribed as a long RNA precursor that contains a hairpin-like structure of about 80 bases
2. An enzyme excises the hairpin
3. The hairpin is transported out of the nucleus by a protein
4. An enzyme chops the loop from the end of the hairpin
5. One strand roughly 22 bases long is loaded into a silencing complex
6. The microRNA helps the silencing complex recognize its target—the untranslated region of a messenger RNA that codes for a specific protein (most animal microRNAs pair only partially with their targets)
7. Production of the protein drops
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Situations like these put students with degrees in computational biology in an outstanding position to find employment and education opportunities after graduation.
Who will hire computational biologists to help with HT data analysis?

- Large Universities and Medical Schools
- Small Universities and Medical Schools
- Huge pharmaceutical companies
- Small startup biotech companies
- Medical practices
- Government agencies local and federal
Who will hire computational biologists to help with HT data analysis?
Speak with faculty in Biological Science about DIS and other opportunities
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- Titan Krios
- Microarray core facility
- Magnet Lab
THANK YOU

• Questions?

• Please feel free to contact me:
  – Jonathan Dennis
  – King Life Sciences Building, 2023
  – http://www.bio.fsu.edu/faculty-dennis.php
  – dennis@bio.fsu.edu
Computer Criminology

Curriculum Flowchart

*Arrows indicate prerequisites, "co" indicates co-requisites (the classes may be taken simultaneously)*

- **MAC1105 (3)**
  - College Algebra

- **MAC1140 (3)**
  - Precalculus

- **CCJ 3011 (3)**
  - Criminology

- **CCJ4700 (3)**
  - Research Methods in Criminology

- **MAD2104 (3)**
  - Discrete Mathematics I

- **COP3014 (3)**
  - Programming I

- **CCJ 4064 (3)**
  - Individual Rights + the Crim Justice System

- **COP3353 (1)**
  - Introduction to Unix

- **CJE4610 (3)**
  - Crime Detection and Investigation

- **COP3330 (3)**
  - Object Oriented Programming

- **CJ Electives (9)**

- **CJ 4938 (3)**
  - CJ System Responses to Cybercrime

- **CDA3100 (3)**
  - Computer Organization I

- **CIS4930 (3)**
  - Cybercrime Detection and Forensics

- **CS Electives (12)**
CS Electives for Computer Criminology

- CS elective options for computer criminology
  - CDA 3101 Computer Organization II
  - CIS 4250 Ethics and Computer Science
  - CIS 4360 Introduction to Computer Security
  - CIS 4361 Applied Computer Security
  - CNT 4504 Introduction to Computer Networks
  - CNT 4406 Network Security and Cryptography
  - CNT 4603 Computer & Network System Administration
  - COP 4342 Unix Tools
  - COP 4530 Data Structures, Algorithms, and Generic Prog
  - COP 4610 Operating Systems & Concurrent Prog
  - COP 4710 Theory and Structure of Databases
Employment Opportunities for CC Majors

- Office of the Attorney General of Florida: Tallahassee
  - Economic Crimes Unit, CyberFraud Division
  - The Child Predator CyberCrime Unit

- Florida Department of Law Enforcement (FDLE): Tallahassee - The Florida Computer Crime Crime Center (FC3)

- National White Collar Crime Center (NW3C): Fairmont, WV

- Federal Bureau of Investigations: Washington, DC
  - Cyber Division: Washington, DC
  - Criminal Justice Information Services Division
Employment Opportunities for CC Majors (cont.)

- U.S. Department of Justice – Computer Crime and Intellectual Property Section: Washington, DC
NSA Approved Certificate in IA

- May be beneficial for students majoring in all UG degrees offered by the CS department.
- Can receive an information assurance certificate approved by NSA after taking the following courses.
  - CEN 4021  Software Engineering II
  - CIS 4360  Introduction to Computer Security*
  - CNT 4406  Network Security and Cryptography*
  - CNT 4504  Introduction to Computer Networks*
  - CNT 4603  Computer & Network System Administration*
  - COP 4610  Operating Systems and Concurrent Prog*
- Classes marked with * also can be used to fulfill a computer criminology elective.
Minor in Computer Science

• Science Track (13 hours)
  – Required:
    • COP3014 (3) – Programming I
    • COP3353 (1) – Introduction to Unix
    • COP3330 (3) – Object Oriented Programming
  – Need to take two of the following:
    • CDA3100 (3) – Computer Organization I
    • CDA3100 (3) – Computer Organization II
    • CEN4020 (3) – Software Engineering I
    • CNT4603 (3) – Computer and Network System Administration
    • COP3252 (3) – Internet Applications Programming with Java
    • COP4342 (3) – Unix Tools
    • COP4530 (3) – Data Structures, Algorithms, and Generic Prog
    • COP4710 (3) – Theory and Structure of Databases
Minor in Computer Science (cont.)

• General Track (12 hours)
  – Need to take one of the following:
    • CGS3416 (3) – Java Programming for Nonspecialists
    • CGS3406 (3) – Object-Oriented Programming in C++
    • COP3014 (3) – Programming I
  – Need to take three of the following:
    • CGS3406 (3) or CGS3416 (3) [can choose one not taken above]
    • CGS2060 (3) or CGS2100 (3) [credit not given for both courses]
    • CGS3066 (3) – Web Programming and Design
    • COP3502 (3) – Introduction to Computer Science
    • CIS4360 (3) – Introduction to Computer Security
    • any 3 hour course listed in the CS Science Track minor
General Advice

- Read e-mail from your CS account regularly.
- Meet with Matt Claypool for advising at least once a semester.
- Consider taking courses in summer semesters to reduce your academic hours taken in Fall/Spring and to graduate in a timely manner.
- Need extra money to pay for your education?
  - Consider applying for a Pell grant, which is based on financial need.
  - Try not work more than 20 hours a week as it will likely affect your GPA.
General Advice (cont.)

- Check the FSU academic calendar for important deadlines and dates.
  - Sep 27
    - Spring 2011 registration guide available.
  - Oct 08
    - last day to change a course to an S/U grade
    - last day to drop course without receiving a grade
    - financial aid deferments expire
  - Oct 11
    - registration for Spring 2011 begins
General Advice (cont.)

- **Start working on your programming assignments early!**
- **Use the CS Majors Lab to do your CS programming assignments.**
- **See your instructor or teaching assistant if you encounter problems or have questions.**
- **Participate in undergraduate research projects if possible.**
Suggestions

• Actively participate in ACM and/or ACM-W activities.

• Nominate CS faculty members for teaching awards if you enjoyed taking their courses.
ACM and ACM-W

- ACM: Frank Sposaro, president
- ACM-W: Caitlin Carnahan, president
- activities
  - programming contests
  - picnics and other social events
  - presentations
- assist the department
ACM

Association for Computing Machinery
Purpose

- Promote an increased knowledge of the science design, development, construction, languages, management and applications of modern computing machinery
- To promote a greater interest in computing and its applications
- To provide a means of communication between persons having interest in computing
- To provide a wider understanding of computers and their use for the rest of the community
Who Can Join

- Anyone interested in the Science of Computing
Programming Contest

- Sat. 10/17/09 @ 10:00 in Majors Lab
Picnic

MMM. Burgers
CS Awards

Scholarships!
25 Years

FSU Department of Computer Science
Congratulations on your 25th Anniversary!!
What's Next??

- Co-Op Events with other groups
- Market Wednesday
- Homecoming Parade
- Halloween Party
- Christmas Fundraiser

- You can make a difference
- www.acm.cs.fsu.edu
Other Feedback?

- Fill out the online questionnaire when you receive this request via e-mail from the department. Can provide any general concerns or suggestions in this questionnaire.

- Any suggestions or questions?
Pizza!

- Free pizza for attendees in 151 Love.