CS 4992: Seminar in Computer Science

Fridays, 1:00pm-1:50pm — Smith 109

Organizer: Ren Quinn

About

The Seminar in Computer Science is designed for students seeking to deepen their understanding of research in the field of computer science. This course provides an overview of prominent research areas through the reading and discussion of scholarly papers. We particularly encourage students considering graduate studies or those interested in engaging in undergraduate research to attend.

Schedule

Spring 2025

Week	Date	Topic	Paper
01	1 / 10	Class Introduction	
02	1 / 17	Reading Research Papers	How to read a paper
03	1 / 24	Parallel Computing	Parsl: Pervasive Parallel Programming in Python (1st pass)
04	1 / 31	Parallel Computing	Parsl: Pervasive Parallel Programming in Python (2nd pass)
05	2 / 7	Networks	A Call for Decentralized Satellite Networks (1st pass)
06	2 / 14	Networks	A Call for Decentralized Satellite Networks (2nd pass)
07	2 / 21	Graph Algorithms	A Learning-based Method for Computing Shortest Path Distances on Road Networks
08	2 / 28	Graph Algorithms	A Learning-based Method for Computing Shortest Path Distances on Road Networks
09	3 / 7	Programming Languages	Towards an API for the Real Numbers
10	3 / 14	No Meeting	Spring Break
11	3 / 21	Programming Languages	Towards an API for the Real Numbers
12	3 / 28	Side-Channel Attacks	Optical Cryptanalysis: Recovering Cryptographic Keys from Power LED Light Fluctuations
13	4 / 4	Programming Languages	Rhyme: A Functional Logic Query Language for Nested Data
14	4 / 11		
15	4 / 18		

Fall 2024

Week	Date	Topic	Paper
01	Aug 23	Class Introduction	
02	Aug 30	Reading Research Papers	How to Read a Paper
03	Sep 06	Data Mining	Themis: Detecting Anomalies from Disguised Normal Financial Activities
04	Sep 13	Data Mining	Themis
05	Sep 20	Type Systems	A Flexible Type System for Fearless Concurrency
06	Sep 27	Type Systems	

07	Oct 04	Robotics	Agents of Autonomy: A Systematic Study of Robotics on Modern Hardware
08	Oct 11	HCI	Organic or Diffused: Can We Distinguish Human Art from AI-generated Images?
09	Oct 18	No Class	Fall Break
10	Oct 25	AI	A General Black-box Adversarial Attack on Graph-based Fake News Detectors
11	Nov 01	Network Monitoring	Trumpet: Timely and Precise Triggers in Data Centers
12	Nov 08	No Class	ACM ICPC regional at BYU
13	Nov 15	Network Monitoring	Trumpet
14	Nov 22	Bioinformatics	Baylee Christensen will present her research to us
15	Nov 29	No Class	Thanksgiving Break
16	Dec 6	No Class	End of semester

Spring 2024

Week	Date	Topic	Paper
01	Jan 12	Class Introduction	
02	Jan 19	Reading Research Papers	How to Read a Paper
03	Jan 26		Polynomial Codes Over Certain Finite Fields
04	Feb 02		Stochastic-Depth Ambient Occlusion
05	Feb 09		
06	Feb 16		Free2CAD: Parsing Freehand Drawings into CAD Commands
07	Feb 23		
08	Mar 01		mReader: Concurrent UHF RFID Tag Reading
09	Mar 08		
10	Mar 15	No Meeting	Spring Break
11	Mar 22		Detecting Counterfeit Liquid Food Products in a Sealed Bottle Using a Smartphone Camera
12	Mar 29		
13	Apr 05		FlexOS: towards flexible OS isolation
14	Apr 12		
15	Apr 19	No Meeting	Research Symposium

Fall 2023

Week	Date	Topic	Paper
01	Aug 25	Class Introduction	
02	Sep 01	Reading Research Papers	How to Read a Paper
03	Sep 08	Software-Defined Networking	OpenFlow: Enabling Innovation in Campus Networks
04	Sep	Computer	The Case for Reduced Instruction Set Computer

	15	Architecture	
05	Sep 22	Computer Architecture	1st pass of Meltdown: Reading Kernel Memory from User Space
06	Sep 29	Computer Architecture	Meltdown, 2nd pass
07	Oct 06	Network Testbeds	FIT IoT-LAB: A Large Scale Open Experimental IoT Testbed
08	Oct 13	No Meeting	Fall Break
09	Oct 20	Data Center Systems	1st pass: Hey, You, Get Off of My Cloud: Exploring Information Leakage in Third-Party Compute Clouds
10	Oct 27	Data Center Systems	2nd pass: Hey, You, Get Off of My Cloud: Exploring Information Leakage in Third-Party Compute Clouds
11	Nov 03	No Meeting	ACM ICPC
12	Nov 10	Databases	1st pass: MillWheel: fault-tolerant stream processing at internet scale
13	Nov 17	No Meeting	Code Camp
14	Nov 24	No Meeting	Thanksgiving Break
15	Dec 01	Databases	2nd pass: MillWheel
16	Dec 08	Conclusion	

Spring 2023

This semester we will read a selection of classic CS papers as published in Harry Lewis' book, Ideas That Created the Future: Classic Papers of Computer Science.

Week	Date	Paper
01	Jan 13	Class Introduction
02	Jan 20	A Mathematical Theory of Communication
03	Jan 27	ELIZA–A Computer Program for the Study of Natural Language Communication between Man and Machine
04	Feb 03	Some Moral and Technical Consequences of Automation (1960), Norbert Wiener
05	Feb 10	Programming with Abstract Data Types (1974), Barbara Liskov and Stephen Zilles
06	Feb 17	Computing Machinery and Intelligence (1950), Alan Mathison Turing
07	Feb 24	A Relational Model of Large Shared Data Banks (1970), Edgar F. Codd
08	Mar 03	The Unix Time-Sharing System (1974), Dennis Ritchie and Kenneth Thompson
09	Mar 10	A Method for Obtaining Digital Signatures and Public-Key Cryptosystems (1978), Ronald Rivest, Adi Shamir, and Len Adleman
10	Mar 18	No Meeting — Spring Break
11	Mar 24	A Protocol for Packet Network Intercommunication (1974), Vinton Cerf and Robert Kahn
12	Mar 31	Man-Computer Symbiosis (1960), J. C. R. Licklider
13	Apr 07	The Education of a Computer (1952), Grace Murray Hopper
14	Apr 14	Big Omicron and Big Omega and Big Theta (1976), Donald E. Knuth

15	Apr 21	Cramming More Components onto Integrated Circuits (1965), Gordon Moore

Fall 2022

Week	Date	Topic	Paper
01	Aug 26	Class Introduction	
02	Sept 2	Reading Research Papers	How to Read a Paper
03	Sept 9	Cryptography	My other car is your car: compromising the Tesla Model X keyless entry system
04	Sept 16	Cryptography	
05	Sept 23	Data Structures	A Simple Implementation Technique for Priority Search Queues
06	Sept 30	Data Structures	
07	Oct 7	Algorithms	The PageRank Citation Ranking: Bringing Order to the Web
08	Oct 14	No Meeting	Fall Break
09	Oct 21	Algorithms	
10	Oct 28	Error Detection/Correction	Erasure Coding in Windows Azure Storage
11	Nov 4	Error Detection/Correction	
12	Nov 11	No Meeting	
13	Nov 18	Data Compression	A Universal Algorithm for Sequential Data Compression
14	Nov 25	No Meeting	Fall Break
15	Dec 2	Data Compression	
16	Dec 9	Conclusion	

Spring 2022

Week	Date	Topic	Paper
01	Jan 14	Class Introduction	
02	Jan 21	Reading Research Papers	How to Read a Paper
03	Jan 28	HCI	The Mismeasurement of Privacy: Using Contextual Integrity to Reconsider Privacy in HCI
04	Feb 04	CS Education	Python Versus C++: An Analysis of Student Struggle on Small Coding Exercises in Introductory Programming Courses
05	Feb 11	Game Development	The effect of operating a virtual doppleganger in a 3D simulation
06	Feb 18	Software Engineering	Automatically finding patches using genetic programming
07	Feb 25	No Meeting	UCUR
08	Mar 04	Software Engineering	Automatically finding patches using genetic programming
09	Mar 11	Security and Privacy	The Parrot is Dead: Observing Unobservable Network Communications
10	Mar 18	No Meeting	Spring Break
11	Mar 25	Security and Privacy	
12	Apr 01	Computer Graphics	Realistic Animation of Liquids
13	Apr 08	Computer Graphics	
	Apr		

14	15	Conclusion	
15	Apr 22	No Meeting	Research Symposium

Fall 2021

Week	Date	Topic	Paper
1	8 / 27	Class Introduction	
2	9 / 3	Reading Research Papers	How to Read a Paper
3	9 / 10	Networks	OpenFlow: Enabling Innovation in Campus Networks
4	9 / 17	Networks	A Network in a Laptop: Rapid Prototyping for Software-Defined Networks
5	9 / 24	Systems	Hints for Computer System Design
6	10 / 1	Systems	Hints for Computer System Design
7	10 / 8	Computer Architecture	Meltdown: Reading Kernel Memory from User Space
8	10 / 15	No Meeting	Fall Break
9	10 / 22	Computer Architecture	Meltdown
10	10 / 29	Virtualization	Xen and the Art of Virtualization
11	11 / 5	Virtualization	Xen
12	11 / 12	Distributed Systems	Scaling Memcache at Facebook
13	11 / 19	Distributed Systems	Memcached
14	11 / 26	No Meeting	Thanksgiving
15	12 / 3	Conclusion	