



# TECHNO-WIZARDS

**2016-2017**



**E.G.S PILLAY ENGINEERING COLLEGE**

**NAGAPATTINAM**

**Department of Computer Science & Engineering**



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## INDEX

NEW TRENDING IN 2016-2017.....	6
TOP 10 SOFTWARE COMPANIES.....	9
TOP 10 IT COMPANIES.....	13
CEO OF GOOGLE.....	14

## MESSAGE



**Chev.S.Paramesvaran**

I deem it a great pleasure and privilege to congratulate the faculty members as they bring out their magazine. This magazine represents the newest channel to showing out the talents of our students.

We hope that this magazine will become the ultimate focus for your participation as we seek to strengthen and enhance our collaboration of knowledge.



**Dr.S.Ramabalan**

My Heartfelt congratulations for this new release of magazine. A milestone achievement indeed! There is no doubt in my mind that it will serve as a beacon to the future generations. I wish you success in all your endeavours.



**Dr.M.Chinnadurai**

I congratulate the members for releasing their magazine. This magazine is started with view to broadcast the various events for the student intelligence. Individually and collectively, this magazine is a measure of our success and foundation of our future. I wish you all the very best.

## VISION

o To produce globally competent computer professionals capable of adaptive to the ever-changing technological trends of Industry and Society

## MISSION

o To build the core competence desirable for a computer professional such as design, development, testing and maintenance of software systems to work in real world projects excelling the expected standards of Industries.

o To train the students to acquire high demand skills of emerging technologies to make them preferable for employers.

o To provide state-of-the-art learning facilities for effective implementation of learner centric teaching-learning process to develop professional skills, self-learning and lifelong learning capabilities.

## PSOs

The graduates will have

PSO1: The ability to apply software engineering principles and practices to design and develop software systems that meet the automation needs of industrial and societal problems.

PSO2: The ability to demonstrate the technical skills and knowledge gained in the fields such as Artificial Intelligence, Data Science, Cloud Computing, Social Network Analysis & Mobile Application development to build successful career and pursue higher education.

## PEOs

PEO1: Graduates will have successful careers in the field of computer science and engineering as computer professionals or entrepreneurs.

PEO2: Graduates will have desirable knowledge on core competencies and emerging technologies to pursue higher education and research.

PEO3: Graduates will continue to learn and adapt to the world of constantly evolving technology.

## Graduates will be able to

PO1: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2: Identify, formulate, research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

PO6: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

PO9: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12: Recognize the need for, and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.



## **New trending in 2016-2017:**

**1. IoT and Smart Home Tech.** We've been hearing about the forthcoming revolution of the Internet-of-Things (IoT) and resulting interconnectedness of smart home technology for years. So what's the holdup? Why aren't we all living in smart, connected homes by now? Part of the problem is too much competition, with not enough collaboration there are tons of individual appliances and apps on the market, but few solutions to tie everything together into a single, seamless user experience. Now that bigger companies already well-versed in uniform user experiences (like Google, Amazon, and Apple) are getting involved, I expect we'll see some major advancements on this front in the coming year.

**2. AR and VR.** We've already seen some major steps forward for augmented reality (AR) and virtual reality (VR) technology in 2016. Oculus Rift was released, to positive reception, and thousands of VR apps and games followed. We also saw Pokémon Go, an AR game, explode with over 100 million downloads. The market is ready for AR and VR, and we've already got some early-stage devices and tech for these applications, but it's going to be next year before we see things really take off. Once they do, you'll need to be ready for AR and VR versions of practically everything—and sample marketing opportunities to follow.

**3. Machine Learning.** Machine learning has taken some massive strides forward in the past few years, even emerging to assist and enhance Google's core search engine algorithm. But again, we've only seen it in a limited range of applications. Throughout 2017, I expect to see machine learning updates emerge across the board, entering almost any type of consumer application you can think of, from offering better recommended products based on prior purchase history to gradually improving the user experience of an analytics app. It won't be long before machine learning becomes a kind of "new normal," with people expecting this type of artificial intelligence as a component of every form of technology.

**4. Automation.** Marketers will be (mostly) pleased to learn that automation will become a bigger mainstay in and throughout 2017, with advanced technology enabling the automation of previously human exclusive tasks. We've had robotic journalists in circulation for a couple of years now, and I expect it won't be long before they make another leap into more practical types of articles. It's likely that we'll start seeing productivity skyrocket in a number of white-collar type jobs—and we'll start seeing some jobs disappear altogether. When automation is combined with machine learning, everything can improve even faster, so 2017 has the potential to be a truly landmark year.

**5. Humanized Big Data.** ( empathetic, qualitative ) Big data has been a big topic for the past five years or so, when it started making headlines as a buzzword. The idea is that mass quantities of gathered data which we now have access to—can help us in everything from planning better medical treatments to executing better marketing campaigns. But big data's greatest strength its quantitative, numerical foundation is also a weakness. In 2017, I expect we'll see advancements to humanize big data, seeking more empathetic and qualitative bits of data and projecting it in a more visualized, accessible way.



**6. Physical-Digital Integrations.** Mobile devices have been slowly adding technology into our daily lives. It's rare to see anyone without a smartphone at any given time, giving us access to practically infinite information in the real-world. We already have things like site to store purchasing, enabling online customers to buy and pick up products in a physical retail location, but the next level will be even further integrations between physical and digital realities. Online brands like Amazon will start having more physical products, like Dash Buttons, and physical brands like Walmart will start having more digital features, like store maps and product trials.

**7. Everything On-Demand.** Thanks to brands like Uber (and the resulting madness of startups built on the premise of being the "Uber of \_\_\_\_\_"), people are getting used to having everything on demand via phone apps. In 2017, I expect this to see this develop even further. We have thousands of apps available to us to get rides, food deliveries, and even a place to stay for the night, but soon we'll see this evolve into even stranger territory. Anyone in the tech industry knows that making predictions about the course of technology's future, even a year out, is an exercise in futility. Surprises can come from a number of different directions, and announced developments rarely release as they're intended.

## Top 10 software companies

**1. Microsoft Corporation:** Yes, you are right, Microsoft Corporation is number one company of world. Microsoft is USA based software company that develops the computer software. most famous software of Microsoft is microsoft windows ( operating system ) , microsoft office and internet explorer (a web browser). It ranked number 1 it software company by its revenue and most valuable also. you will find most of computer have Microsoft window operating system . It is founded by Bill gates and Paul Allen in 1975. More that 120000 employee worked at Microsoft. Market Capitalization of Microsoft is \$340.8 B. Here check out Income Report of Microsoft.

**Revenue** – US\$ 93.27 billion

**Operating income** – US\$ 18.16 billion

**Net income** – US\$ 12.19 billion

**Total assets** – US\$ 176.22 billion

**Total equity** – US\$ 80.08 billion

**2. Oracle:** Oracle Corporation is an American multinational computer technology corporation, headquartered in Redwood City, California. In software product the main Product is their Database management system named Oracle DBMS . Oracle is second largest software making company after microsoft. Larry Ellison was the person who founded Oracle Corporation. Market Capitalization of Oracle is \$187.6 B. Here check out Income Report of oracle.

**Revenue** – US\$ 38.23 billion

**Operating income** – US\$ 13.87 billion

**Net income** – US\$ 9.94 billion

**Total assets** – US\$ 110.90 billion

**Total equity** – US\$ 49.10 billion

**3. IBM:** International Business Machines Corporation is an American multinational technology and consulting corporation, with corporate headquarters in Armonk, New York IBM is among the top 3 on our list of the biggest software houses. The company was founded by Charles Ranlett Flint way back in 1911 in the New York. It has a strong presence in over 170 countries and over 370,000 people are employed by the organization worldwide. Market Capitalization of IBM is \$160.2 B.

**Revenue** – US\$ 92.793 billion

**Operating income** – US\$ 19.986 billion

**Net income** – US\$ 12.023 billion

**Total assets** – US\$ 117.53 billion

**Total equity** – US\$ 11.868 billion

**4. SAP SE:** SAP is German multinational company which make software products to manage business and customer relations. The company has more than 3 lakhs customer around the world . It was founded in 1972 by five IBM engineers and now employs over 74.000 employees. Software represents 83 percent of its business. Market Capitalization of SAP is \$90.2 B. Here below is income report:

**Revenue** – €17.56 billion

**Operating income** – €4.331 billion

**Profit** – €3.275 billion

**Total assets** – €38.374 billion

**Total equity** – €19.594 billion

**5. Tata Consultancy Services(TCS) Limited:** TCS is Indian Multinational it Service and consulting company. It is part of tata Group. It is largest it based company in india also In top it service company in the world . TCS is Founded in 1968 . TCS also Have large number of employees around 3.5 lakhs.It is also the largest IT services company based in India by 2014 FY revenues. . It is headquartered in Mumbai, India.

**Revenue** – US\$ 16.54 billion  
**Operating income** – US\$ 4.38 billion  
**Profit** – US\$ 3.70 billion  
**Total assets** – US\$ 13.76 billion  
**Total equity** – US\$ 11.10 billion

**6. Cognizant Technology Solutions:** Cognizant Technology Solutions Corp is an American multinational corporation that provides custom information technology, consulting, and business process outsourcing services. It is headquartered in College Station, Texas, United States..In September 2014, Cognizant Technology Solutions Corp acquired TriZetto Corp, a healthcare IT services provider, for \$2.7 billion. Cognizant Shares, rose nearly 3 percent in premarket trading. Market Capitalization of Cognizent is \$38.1 B. Here below is income report:

**Revenue** – US\$ 12.416 billion  
**Operating income** – US\$ 2.142 billion  
**Profit** – US\$ 2.052 billion  
**Total assets** – US\$ 13.065 billion  
**Total equity** – US\$ 9.278billion

**7. Infosys:** Infosys Limited is an Indian multinational corporation that provides business consulting, information technology and outsourcing services. It is headquartered in Bangalore. Infosys is founded by K. Dinesh, Narayana Murthy, Nandan M. Nilekani, S. Gopalakrishnan, Pandit Shrikant and S. D. Shibulal on July 2, 1981. Market Capitalization of Infosys is \$40.2 B.

**Revenue** – US\$ 9.51 billion  
**Operating income** – US\$ 2.375billion  
**Profit** – US\$ 2.052 billion  
**Total assets** – US\$ 11.378 billion  
**Total equity** – US\$ 9.324billion

**8. Capgemini :** Capgemini is a French multinational management consulting corporation headquartered in Paris, France. It is one of the world's largest consulting, technology and outsourcing companies with 180,000 employees in over 40 countries. It started off as an enterprise management and data processing company. It won the SAP North America Partner Excellence Award 2015 for SAP Platform Solutions. Cap Gemini S.A. is a French multinational management consulting corporation. Market Capitalization of Capgemini is \$ 13.8 B

**Revenue – €11.915 billion**

**Operating income – €1.262 billion**

**Profit – €1.124 billion**

**Total assets – €11.45 billion**

**Total equity – €11.45 billion**

**9. Symantec:** The company was founded in 1982 by Gary Hendrix. Symantec US based Company Which develop software for security, Storage and Backup purpose and also provide a professional maintenance service to its software products. In 2015 Symantec is divided into two parts one part focus on Security products and another part focus on information managing service softwares. Here below is income report:

**Revenue – US\$ 6.676 billion**

**Operating income – US\$ 1.183 billion**

**Profit – US\$ 898 million**

**Total assets – US\$ 13.54 billion**

**Total equity – US\$ 5.797 billion**

**10. VMware Inc.** VMWare US based software company which provide cloud and virtualization software and its services. It was founded by Diane Greene, Scott Devine, Mendel Rosenblum, Edouard Bugnionin and Edward Wang in 1998. It is based in Palo Alto, California. It is the first who Virtualize the x86 architecture. VMWare software run on Microsoft Windows, Linux, and Mac OS X platforms. Market Capitalization of VMware is US\$ 35.7 billion. Here below is income report of VMware:

**Revenue** – US\$ 6.035 billion  
**Operating income** \$ 0.86 billion  
**Total assets** – US\$ 15.216 billion  
**Total equity** –US\$ 7.586 billion

**Top 10 IT companies**



HP's \$111 billion in annual revenue barely grew last year, which is why CEO Meg Whitman has announced plans to split HP into two separate businesses: HP Enterprise, which will sell enterprise infrastructure, software and services to businesses, and HP Inc., a consumer-facing seller of printers, computers and software. HP is large enough that both entities will remain in the top 50 Fortune 500 companies after the split, which is scheduled to occur by the end of fiscal 2015.

\$182 billion in revenue. \$40 billion in profits. Number five on the Fortune 500 list. It's Apple



IBM has hit some struggles transitioning its on-premise server business to the cloud, watching its \$94 billion in revenue shrink 5.6% last year with profits falling by 27%. In a Fortune profile last year, CEO Ginny Rometty outlined her plan for the company's transformation, which includes a push into cloud, mobile, and Watson.

Amazon's momentum was called into doubt last year, for the first time in years, after it posted its biggest loss in years. Making matters worse, the company's Fire phone was a massive disappointment, its cloud services faced competition from Microsoft, and the company got into a messy fight with book publisher Hachette. Still, with \$89 billion in revenue, the company jumped six spots to number 29 on the Fortune 500 list this year



Microsoft's Azure cloud business has been a key earnings driver for the company as its software licensing and computing revenue declines. With \$87 billion in annual revenue, the company jumped three spots to number 31.

Jumping six spots to number 40, the search giant-turned-moonshot-company grew revenue by 17.9% to \$71 billion. Like all incumbent Internet players, Google's core business is racing to catch up to the shift to mobile. But with \$14 billion in annual profits, the company has plenty of wiggle room.



The computer chip-maker jumped one spot on this year's Fortune 500 list to number 52, thanks to 6% revenue growth to \$56 billion. The company has suffered from the slumping sales of personal computers, but has invested in growth areas like selling microchips to data center operators and cloud companies. The company is also betting on growth in "Internet of Things," or connected devices.



Cisco fell five spots to number 60 this year, having lost 3% in revenue with a total of \$47 million. In May the company announced SVP of worldwide field operations Chuck Robbins would replace CEO John Chambers, one of the longest-running tech industry CEOs. (Fortune recently profiled Chambers' effect on the industry.)



Oracle made news earlier this year when the company announced CEO Larry Ellison would step down. Replacing him are co-CEO's Safra Catz and Mark Hurd, but as Fortune argued at the time, it's just business as usual for the enterprise tech company, which might not be such a good thing. As Adam Lashinsky wrote at the time: "Oracle has been egregiously late to embrace cloud computing, an entirely different business model for selling soft-



The chipmaker has experienced pressure in the last year to spin off its chip unit from its patent-licensing business. Qualcomm grew revenue 6.5% to \$26 billion, with profits up 16.3%.

## CEO of GOOGLE

### BIOPHIC of SUNDAR PICHAI:

Pichai Sundararajan ( born July 12, 1972 ), also known as Sundar Pichai ( /ˈsʊndəːr piːtʃaɪ/ ), is an Indian - American Tamil business executive. He is the chief executive officer ( CEO ) of Google LLC. Formerly the Product Chief of Google, Pichai's current role was announced on August 10, 2015, as part of the restructuring process that made Alphabet Inc. into Google's parent company, and he assumed the position on October 2, 2015.

### Early life and education

Pichai was born in Madurai, Tamil Nadu, India in a Tamil family. His mother Lakshmi was a stenographer and his father, Regunatha Pichai was an electrical engineer at GEC, the British conglomerate. His father also had a manufacturing plant that produced electrical components. Pichai grew up in a two-room apartment in Ashok Nagar, Chennai.

Pichai completed schooling in Jawahar Vidyalaya, a Central Board of Secondary Education school in Ashok Nagar, Chennai and completed the Class XII from Vana Vani school in the Indian Institute of Technology Madras. He earned his degree from Indian Institute of Technology Kharagpur in metallurgical engineering. He is currently a distinguished alumnus. He holds an M.S. from Stanford University in material sciences and engineering, and an MBA from the Wharton School of the University of Pennsylvania, where he was named a Siebel Scholar and a Palmer Scholar, respectively.

## Career:

Pichai speaking at the 2015 Mobile World Congress in Barcelona, Spain. Pichai worked in engineering and product management at Applied Materials and in management consulting at McKinsey & Company. Pichai joined Google in 2004, where he led the product management and innovation efforts for a suite of Google's client software products, including Google Chrome and Chrome OS, as well as being largely responsible for Google Drive. He went on to oversee the development of different applications such as Gmail and Google Maps. On November 19, 2009, Pichai gave a demonstration of Chrome OS; the Chromebook was released for trial and testing in 2011, and released to the public in 2012. On May 20, 2010, he announced the open-sourcing of the new video codec VP8 by Google and introduced the new video format, WebM.

## Sundar Pichai Achievements And Accomplishments:

- One of the major achievements of Sundar Pichai is the launch of Google Chrome. He was the mastermind behind the current world's one of the best browsers, Chrome. He played a major role in the development and launching of this product, which is now the world's number 1 browser.
- In 2008, Sundar Pichai was promoted to Vice President of product development in Google.
- In 2012, Pichai became the senior Vice President of Chrome & other apps.
- In 2013, Sundar Pichai was given the charge of Android also because the previous in-charge had left to work on another project.
- Another achievement of Sundar Pichai was Android.
- Sundar Pichai was behind the Chrome Operating System.

## Sundar Pichai Career after Education:

After his education, Sundar Pichai worked in Engineering and Product management at Applied Materials at McKinsey & Company. He joined Google in 2004. He led the product development including Google Chrome. In 2009, he gave the demonstration of Chrome OS. In 2013, Pichai added Android to the list of Google products that he oversees. He was also the director of Jive Software from 2011-2013. In 2015, he was selected as the next CEO of Google.



## CSE Project #1: Computational Strategic Reasoning



Faculty Mentor: Michael Wellman (wellman@umich.edu)

**Prerequisites:** Programming ability; interest / background in finance, economics, game theory, and/or statistics (helpful though not required)

**Description:** The Strategic Reasoning Group develops computational tools to support reasoning about complex strategic scenarios, including trading in markets (e.g., financial, supply chains, Internet advertising), cyber-security, and other applications. One of our most active projects focuses is on implications of algorithmic and high-frequency trading in financial markets. The undergraduate researcher will support development and analysis of strategies for algorithmic trading, or another domain of current research interest.

## CSE Project #2: Active Learning and Crowdsourcing Interface

Faculty Mentor: Barzan Mozafari (mozafari@umich.edu)

**Prerequisites:** Basic Statistics, Matlab, HTML, PHP or Python

**Description:** Implement a flexible interface that can implement an active learning framework to interact with Amazon Turk. The idea is to invoke an active learning algorithm to decide which questions to ask and when to ask the crowd.



## CSE Project #3: MySQL for the Cloud

Faculty Mentor: Barzan Mozafari (mozafari@umich.edu)

**Prerequisites:** Basic database concepts, Linux, C/C++, open-source hacking skills

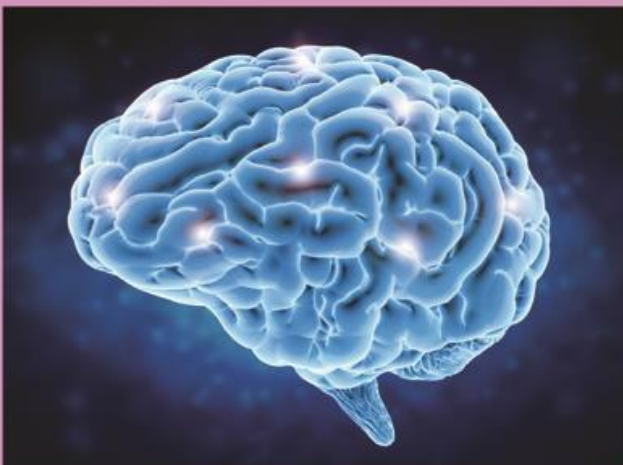
**Description:** Implementing small extensions of MySQL (an open source database) that make it easier to prototype cloud computing ideas using MySQL. Examples of such extensions are profiling hardware usage, logging locking details, and intercepting client connections.

## CSE Project #4: Extending BlinkDB

Faculty Mentors: Barzan Mozafari (mozafari@umich.edu)

**Prerequisites:** Basic database and statistics knowledge, Java, (preferably Web programming), strong system building skills

**Description:** BlinkDB is an open source distributed database that can query tens of terabytes of data in a matter of seconds. The intern in this project will have the opportunity to get familiar with a Big Data environment and contribute through several small modifications of the original code that can improve the overall performance and the user experience.



## CSE Project #5:

Faculty Mentor: Honglak Lee (honglak@eecs.umich.edu) Looking for 2 students

**Prerequisites:** Linear algebra; probability and statistics; programming experience in MATLAB, python, or C/C++; knowledge about machine learning or artificial intelligence is desirable

**Description:** The brain has an impressive ability to process a variety of sensory input data, including images, sounds, languages, and touches. Recent biological and computational studies suggest that the brain may be using a single machine learning algorithm to develop representations from such diverse sensory domains. Furthermore, humans can readily learn from vast amounts of unlabeled data, together with only a small amount of supervision; this is because humans can easily recognize and discover underlying structures from seemingly complex input data. Inspired by this evidence, we aim to develop machine learning algorithms to develop good feature representations from large unlabeled data. Specifically, we will develop novel learning algorithms based on sparse coding, restricted Boltzmann machines, autoencoders, slow feature analysis, and deep networks. Further, we apply these algorithms to learn high-level features from large unlabeled data, and we then use these learned features to supervised learning tasks in artificial intelligence.



### CSE Project #7: Improvement of the tools DESUMA and UMDES

Faculty Mentor: Stephane Lafortune (stephane@umich.edu)

Prerequisites: EECS 281 or advanced programming experience; EECS 376 (recommended); Programming experience in Java (recommended)

Description: Discrete Event Systems are a class of dynamical systems that occurs widely in modern technology, such as in Cyber- and Cyber-Physical Systems. UMDES is a library of routines, written in C or C++, that implement the most common algorithms for supervisory control, diagnosis, and privacy analysis for Discrete Event Systems modeled by finite-state automata. DESUMA is Graphical User Interface that embeds UMDES commands and draws the layout of small to medium-sized automata. See: [wiki.eecs.umich.edu/desuma](http://wiki.eecs.umich.edu/desuma) for further details about these tools.

### CSE Project #8: Embedded Project Development

Faculty Mentor: Mark Brehob (brehob@umich.edu)

Prerequisites: Preferred qualifications: Significant embedded systems experience as well as a strong background in programming and a solid background in analog circuits. In particular the idea candidate would have taken EECS 373, 473, 281 and 311. In addition, this project will involve a lot of writing and having strong English writing skills is strongly desired.

Minimum qualifications: EECS 373 and EECS 281 or a background equivalent to those classes with reasonable writing skills and no fear of analog circuits.

Description: In this project you will be wearing a number of hats. You will be designing and building an energy constrained embedded platform. You will also be developing and updating lessons and labs in embedded systems for majors and non-majors including coverage of RTOSes, Linux, and the Arduino environment. It is likely you will also have some training responsibilities (teaching others the basics of embedded systems in part to beta test your work).

### CSE Project #9: Robot Mobile Manipulation

Faculty Mentor: Chad Jenkins (ocj@umich.edu)

Prerequisites: Coursework or competency in Linear Algebra, proficiency in C++ and/or JavaScript, experience with Unix-based operating systems.

Description: Implementation of algorithms and development of methods for robot perception and mobile manipulation. Summer projects will involve processing to infer 3D geometric information from depth sensing (e.g., Microsoft Kinect), robot control based on inferred perception, and creation of web-based frontend interfaces. The larger research efforts for summer projects is described in the following papers:



### CSE Project #6: Core Code

Faculty Mentor: Valeria Bertacco (vale@umich.edu)

Prerequisites: EECS281; Recommended: C++, scripting

Description: In this project we want to create a model for what code users run on their devices. For instance, when we run a sorting algorithm, the core step is the swapping of two entries; when we watch a movie, we run lots of decoding routines. The purpose of this effort is to automatically generate interesting variants of these code sequences so that it becomes possible to generate many interesting tests for the hardware devices, without wasting the time of the engineering team who is developing them.



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### CSE Project #10: Quick-assembly for powerful chips

Faculty Mentor: Valeria Bertacco (vale@umich.edu)

Prerequisites: Basic computer architecture (for instance, EECS370); Recommended: C++, scripting

Description: Modern processors include a variety of components embedded on a single chip. Even the smallest smartphone chip comprises graphic units, video decoders, smartradio modules, crypto engines, etc. Connecting all these components together effectively is a challenging design effort. In this project, we want to design a network that can connect any set of components in a plug-and-play fashion, so that new chip designs can be much cheaper and faster.

### CSE Project #11: Intelligent Interface Prototyping Tools

Faculty Mentor: Walter Lasecki (wlasecki@umich.edu)

Prerequisites: Proficiency in javascript / web programming; Experience using design tools / collaborative online editors; Experience developing with Meteor, SVG canvas (svg-edit), or related frameworks preferred

Description: Prototyping systems allows designers and developers to quickly get their ideas in front of real users, get feedback, and iterate on their designs. However, this is often itself a time-consuming process. This research project aims to develop a system that lets designers and developers prototype functional systems as quickly as they can describe them aloud, providing unparalleled ability to quickly iterate on designs, even during live trials.

Students will help design and develop novel features to add to a prototype platform that we have previously developed (see: <http://cs.rochester.edu/hci/pubs/pdfs/apparition.pdf>), and test their results with real end users.

Possible extensions of interest are related to using machine learning to understand and general from human examples, adding new types of interaction (e.g., via video + a physical whiteboard with projected interfaces), and more.

### CSE Project #12: Dialog System for Academic Advising

Faculty Mentor: Emily Mower Provost (emilykmp@umich.edu)

Prerequisites: EECS 280

Project Description: We are researching how students advisees and faculty advisors interact and coordinate their behaviors. The goal of this project is to develop an interactive dialog system for student advising. We are looking for students interested in working on speech recognition, dialog management, behavior recognition, natural language processing, and/or system infrastructure.

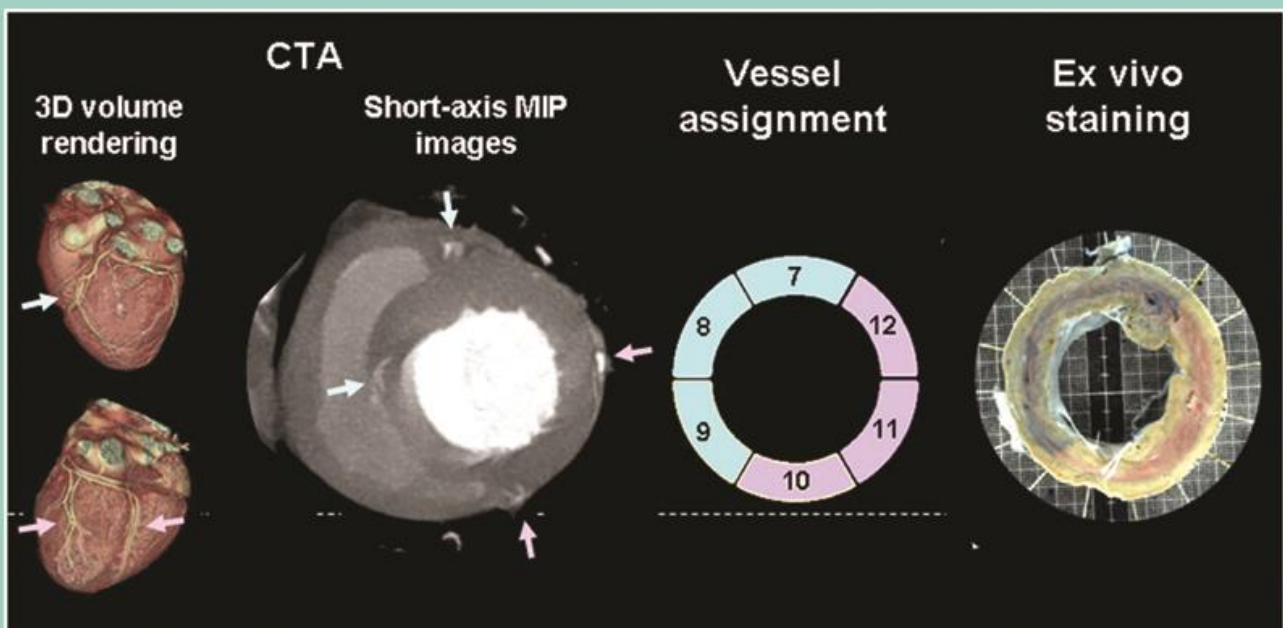


### CSE Project #13: Coronary Angiogram Segmentation

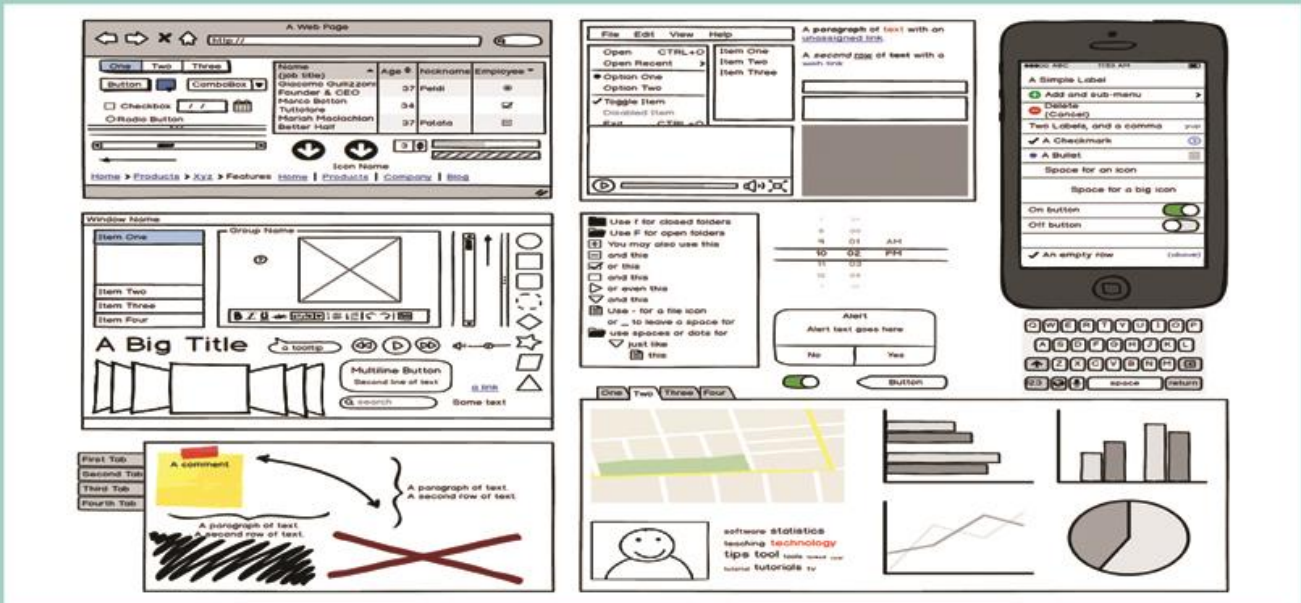
Faculty Mentor: Kayvan Najarian (kayvan@umich.edu)

Prerequisites: Calculus, Programming (Basic knowledge)

Description: The goal of this project is to develop an automated system to analyze video angiograms to detect stenosis and measure the extent of stenosis using image and video processing techniques.



## CSE Project #11: Intelligent Interface Prototyping Tools



Faculty Mentor: Walter Lasecki (wlasecki@umich.edu)

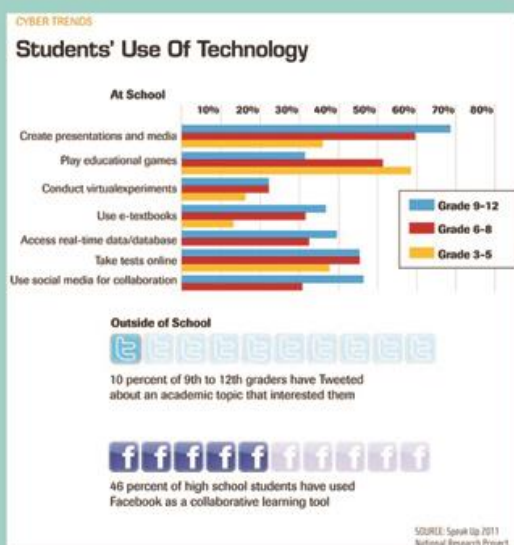
Prerequisites: Proficiency in javascript / web programming; Experience using design tools / collaborative online editors; Experience developing with Meteor, SVG canvas (svg-edit), or related frameworks preferred

Description: Prototyping systems allows designers and developers to quickly get their ideas in front of real users, get feedback, and iterate on their designs. However, this is often itself a time-consuming process. This research project aims to develop a system that lets designers and developers prototype functional systems as quickly as they can describe them aloud, providing unparalleled ability to quickly iterate on designs, even during live trials.

Students will help design and develop novel features to add to a prototype platform that we have previously developed (see: <http://cs.rochester.edu/hci/pubs/pdfs/apparition.pdf>), and test their results with real end users.

Possible extensions of interest are related to using machine learning to understand and general from human examples, adding new types of interaction (e.g., via video + a physical whiteboard with projected interfaces), and more.

## CSE Project #12: Dialog System for Academic Advising



Faculty Mentor: Emily Mower Provost (emilykmp@umich.edu)

Prerequisites: EECS 280

Project Description: We are researching how students advisees and faculty advisors interact and coordinate their behaviors. The goal of this project is to develop an interactive dialog system for student advising. We are looking for students interested in working on speech recognition, dialog management, behavior recognition, natural language processing, and/or system infrastructure.



# EGS PILLAY

## ENGINEERING COLLEGE

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