



Trinity College Dublin
Coláiste na Tríonóide, Baile Átha Cliath
The University of Dublin

Use Blackboard's forum if a question may be relevant to other students, too.
Email always both joeran.beel@scss.tcd.ie and doug.leith@scss.tcd.ie. Give a meaningful subject, starting with "[ML1819]". No file attachments.

Week 01 (1): Introduction to the Module

CS7CS4/CS4404 Machine Learning

Version 4: 2018-09-22 16:09

Dr Joeran Beel

Assistant Professor in Intelligent Systems
Department of Computer Science and Statistics
Trinity College Dublin, Ireland

Dr Douglas Leith

Professor in Computer Systems
Department of Computer Science and Statistics
Trinity College Dublin, Ireland

Re-Scheduled Lectures and Labs

- ~~Tuesday 11th Sept. 15:00-16:00 --> Monday 17th Sept. 18:00-19:00 in the McNeil Lecture Theatre (Hamilton Building)~~
- Lab Sessions only take place when explicitly announced (keep all dates free in your calendar). Keep in mind, there are different times (and rooms ?) for CS7CS4 and CS4404.



<https://cdn.iphonelife.com/sites/iphonelife.com/files/Reschedule-Appointments-by-Dragging-and-Dropping-Calendar-Events.jpg>

Outline

- 1. The lecturers**
- 2. The Magic of Machine Learning**
- 3. The module**
- 4. Expectations & Rules**
- 5. You**

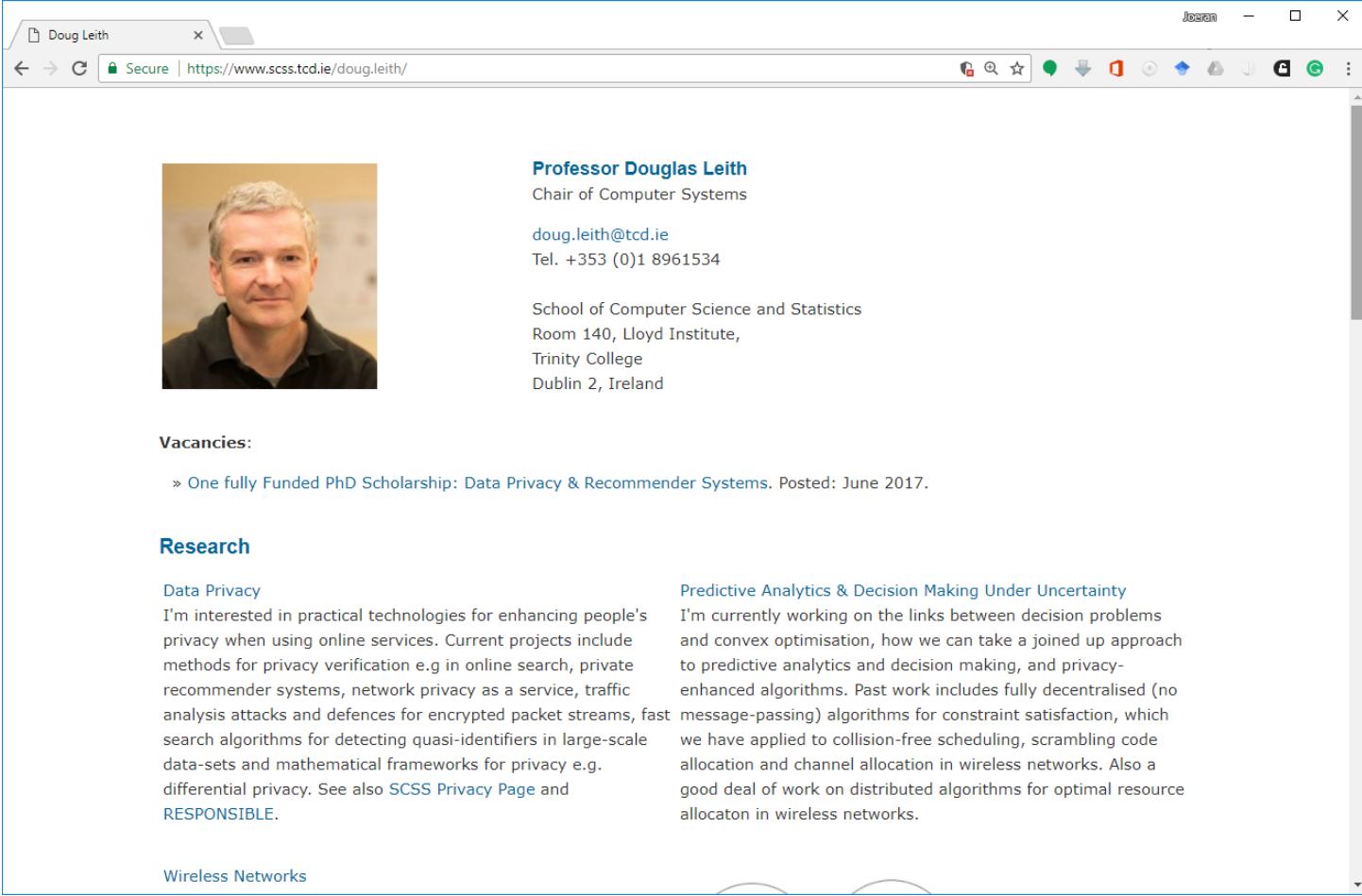


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The Lecturers

Douglas Leith

<https://www.scss.tcd.ie/doug.leith/>



The screenshot shows a web browser window with the title bar "Doug Leith". The address bar displays "Secure | https://www.scss.tcd.ie/doug.leith/". The page content includes a portrait photo of Professor Douglas Leith, his contact information (email: doug.leith@tcd.ie, phone: Tel. +353 (0)1 8961534), and his academic address (School of Computer Science and Statistics, Room 140, Lloyd Institute, Trinity College, Dublin 2, Ireland). Below this, there is a "Vacancies:" section listing a "One fully Funded PhD Scholarship: Data Privacy & Recommender Systems. Posted: June 2017." Under the "Research" heading, two sections are listed: "Data Privacy" and "Predictive Analytics & Decision Making Under Uncertainty".

Professor Douglas Leith
Chair of Computer Systems
doug.leith@tcd.ie
Tel. +353 (0)1 8961534

School of Computer Science and Statistics
Room 140, Lloyd Institute,
Trinity College
Dublin 2, Ireland

Vacancies:

» One fully Funded PhD Scholarship: Data Privacy & Recommender Systems. Posted: June 2017.

Research

Data Privacy
I'm interested in practical technologies for enhancing people's privacy when using online services. Current projects include methods for privacy verification e.g in online search, private recommender systems, network privacy as a service, traffic analysis attacks and defences for encrypted packet streams, fast search algorithms for detecting quasi-identifiers in large-scale data-sets and mathematical frameworks for privacy e.g. differential privacy. See also [SCSS Privacy Page](#) and [RESPONSIBLE](#).

Predictive Analytics & Decision Making Under Uncertainty
I'm currently working on the links between decision problems and convex optimisation, how we can take a joined up approach to predictive analytics and decision making, and privacy-enhanced algorithms. Past work includes fully decentralised (no message-passing) algorithms for constraint satisfaction, which we have applied to collision-free scheduling, scrambling code allocation and channel allocation in wireless networks. Also a good deal of work on distributed algorithms for optimal resource allocation in wireless networks.

Wireless Networks

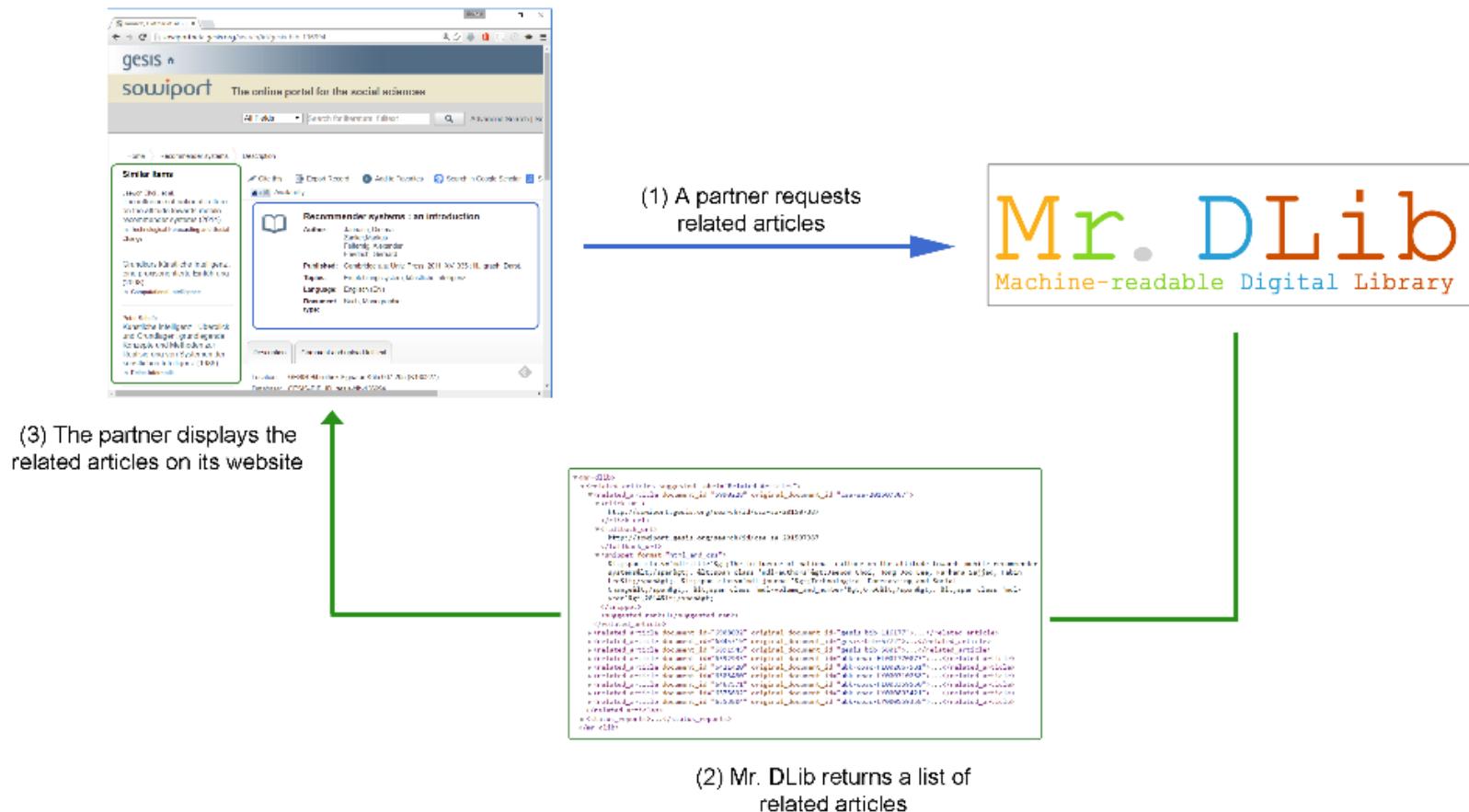
Joeran Beel

Career



Mr. DLib: Recommendations-As-a-Service

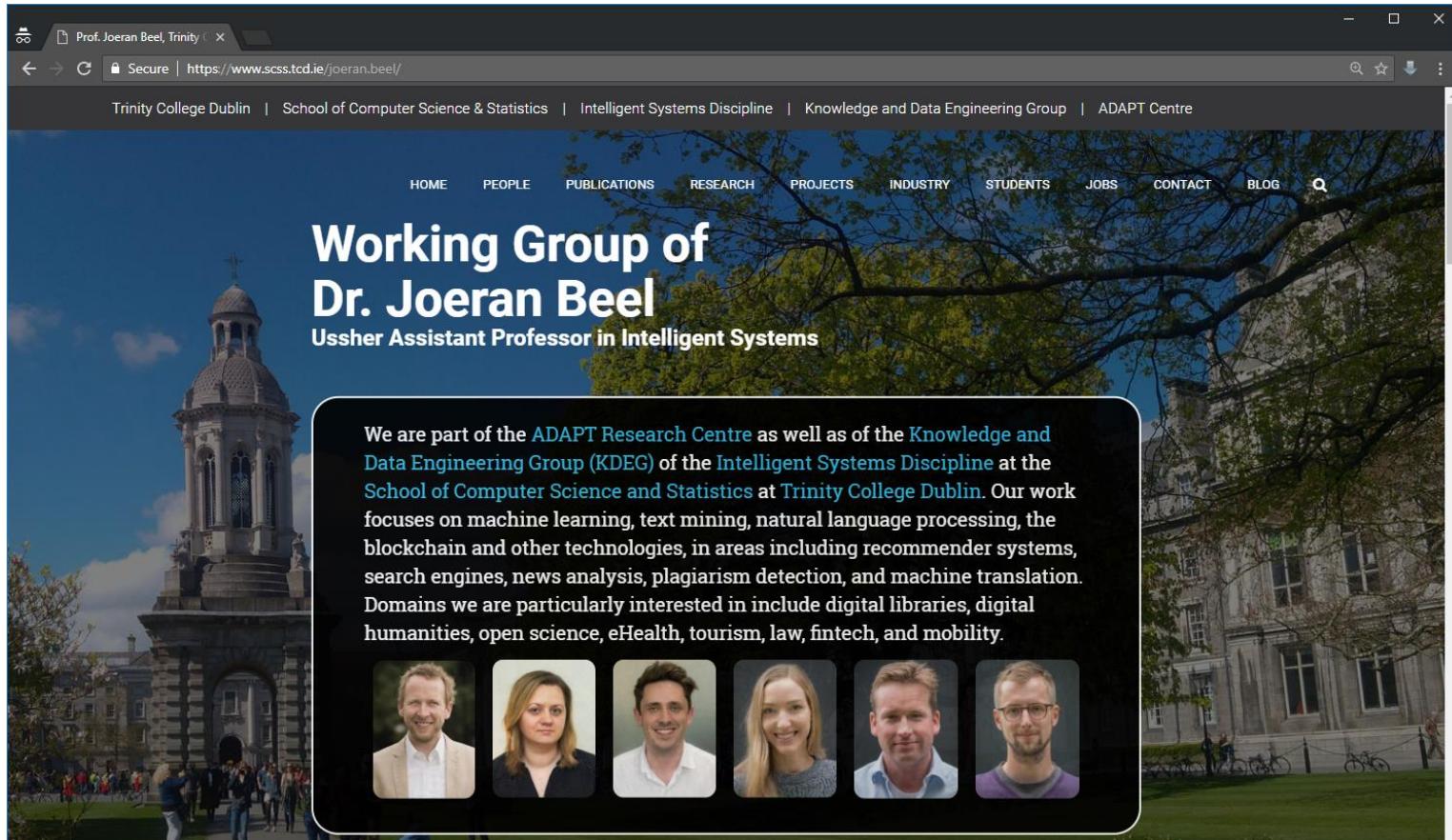
<http://mr-dlib.org>



Joeran Beel

Website

- <https://www.scss.tcd.ie/joeran.beel/>



Project Opportunities

- **Voluntary Work with Mr. DLib Team** – <http://mr-dlib.org>
 - Compensation: 171,000 JPY/per month (~ 1300€)
- **Research internship at NII, Tokyo**
 - Duration: 3-6 months
 - Details
https://scss.tcd.ie/postgraduate/structuredphd/earrach_sakura_award.php



<http://nandanbuildcon.com/wp-content/uploads/2016/09/outgoing-projects.jpg>

Life in Tokyo and Japan



Life in Tokyo and Japan



Life in Tokyo and Japan



Life in Tokyo and Japan



Life in Tokyo and Japan





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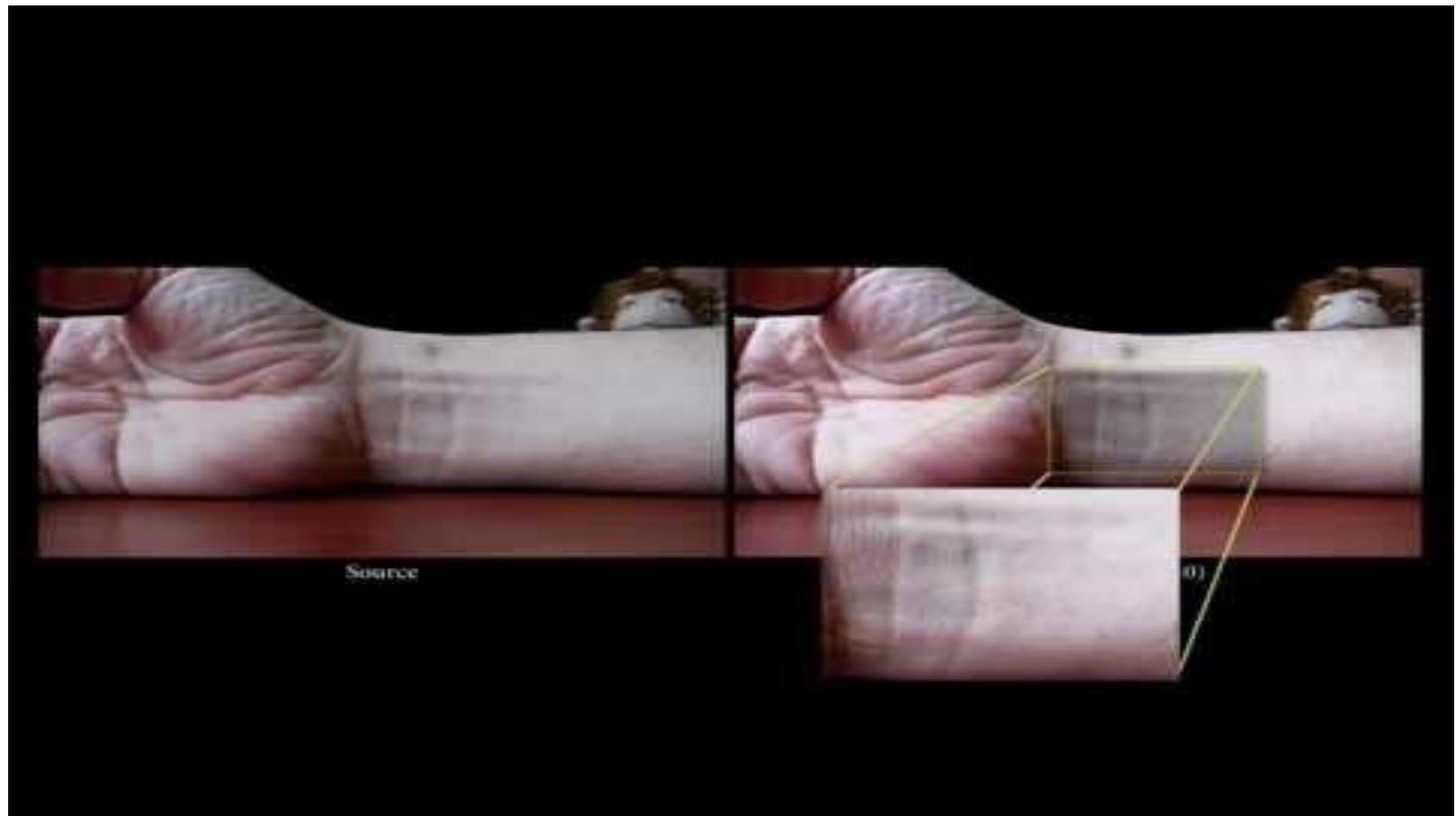
Final-Year Projects

Final Year Projects Dissertations

- Find supervisor soon
- <https://studentprojects.scss.tcd.ie>
- My project ideas
<https://joeranbeel.atlassian.net/wiki/spaces/BEEL/pages/133333043/Final-Year+Projects+Dissertations>

Using Invisible Motions for ML or RecSys

- <https://www.youtube.com/watch?v=ONZcjs1Pjmk> (1:28 and 3:18)





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The Magic of Machine Learning

(What can Machine Learning Do?)

Obama and Machine Learning

- <https://www.youtube.com/watch?v=cQ54GDm1eL0>



Artificial Photo and Video Creation

- https://www.youtube.com/watch?v=3AlpPlzM_qs



Dance Video

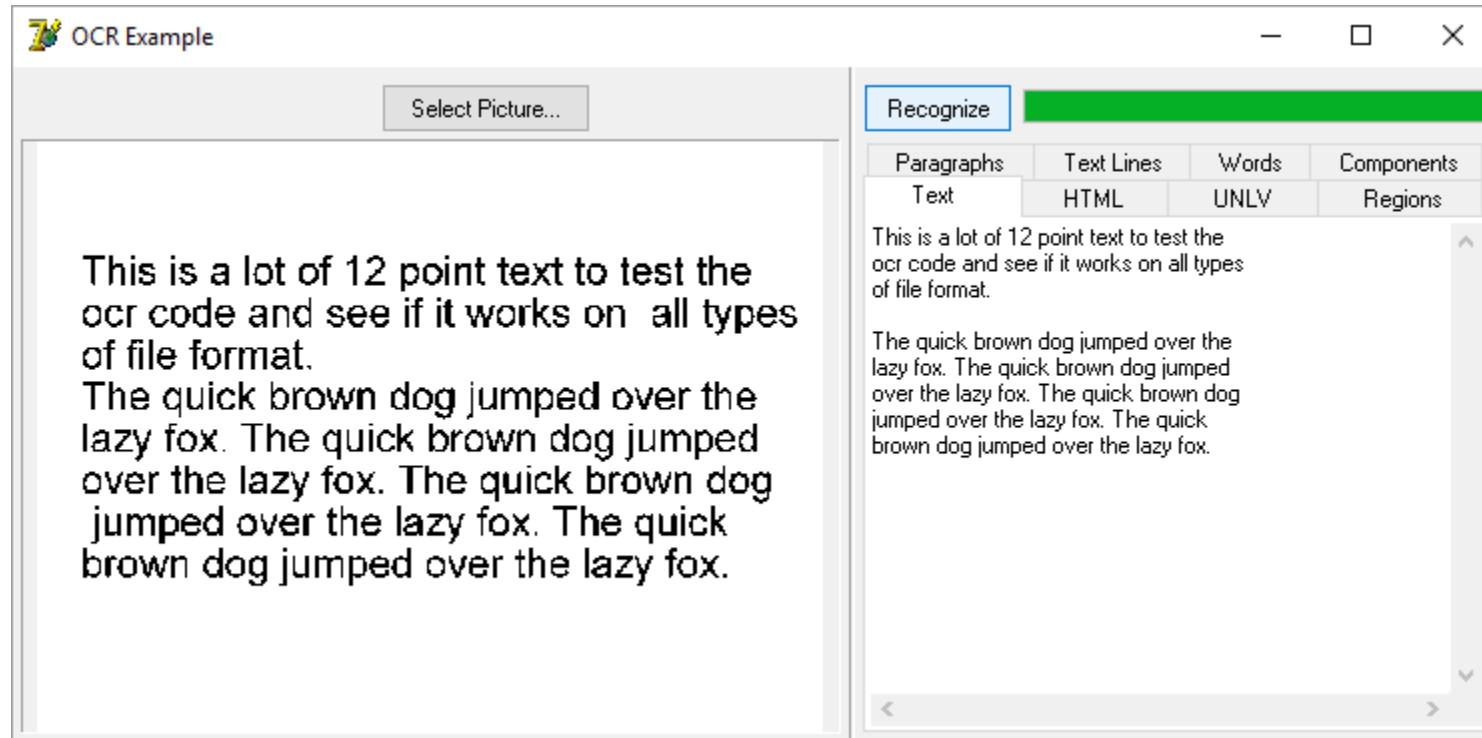
- <https://www.youtube.com/watch?v=PCBTZh41Ris>



- <https://ai.googleblog.com/2018/05/duplex-ai-system-for-natural-conversation.html>
- **Who is the machine?**



Optical Character Recognition (OCR)



<https://www.winsoft.sk/ocrdemo.png>

Spam Detection



<https://i1.wp.com/securitytraning.com/wp-content/uploads/2016/11/Spam-filter.jpg?fit=1024%2C632&ssl=1>

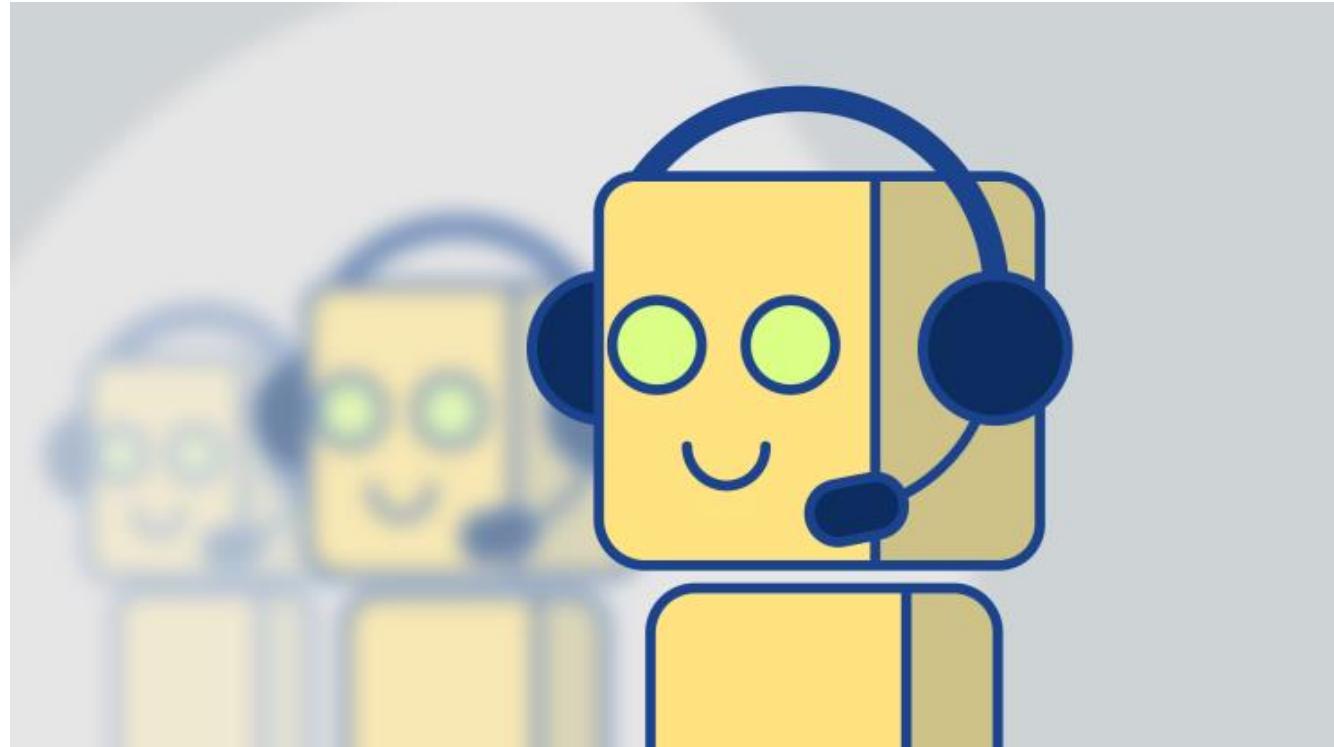
Fraud Detection



<http://the-military-guide.com/wp-content/uploads/2013/01/Credit-Card-Fraud.jpg>

Customer Service / Chat Robots

- Alternative to simple phone robots or keyboard inputs
- Answering natural language questions



<https://tctechcrunch2011.files.wordpress.com/2016/05/robot-customer-service.png?w=738>

Recommendation / Personalisation

Frequently Bought Together



Total price: \$83.09

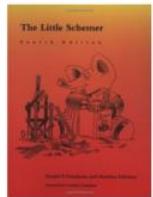
Add both to Cart

Add both to List

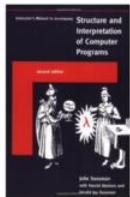
This item: Structure and Interpretation of Computer Programs - 2nd Edition (MIT Electrical Engineering and... by Harold Abelson Paperback \$50.50

The Pragmatic Programmer: From Journeyman to Master by Andrew Hunt Paperback \$32.59

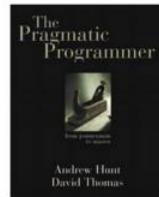
Customers Who Bought This Item Also Bought



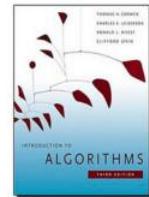
The Little Schemer - 4th Edition
Daniel P. Friedman
4.5 stars 64 reviews
Paperback \$36.00 ✓Prime



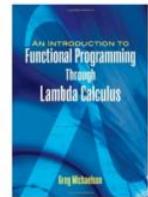
Instructor's Manual t/a Structure and Interpretation of Computer Programs...
Gerald Jay Sussman
4.5 stars 5 reviews
Paperback \$28.70 ✓Prime



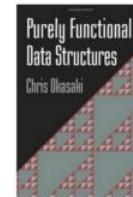
The Pragmatic Programmer: From Journeyman to Master
Andrew Hunt
4.5 stars 328 reviews
Paperback \$32.59 ✓Prime



Introduction to Algorithms, 3rd Edition (MIT Press)
Thomas H. Cormen
4.5 stars 313 reviews
#1 Best Seller in Computer Algorithms
Hardcover \$66.32 ✓Prime



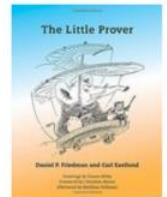
An Introduction to Functional Programming Through Lambda Calculus
Greg Michaelson
4.5 stars 23 reviews
Paperback \$20.70 ✓Prime



Purely Functional Data Structures
Chris Okasaki
4.5 stars 19 reviews
Paperback \$40.74 ✓Prime



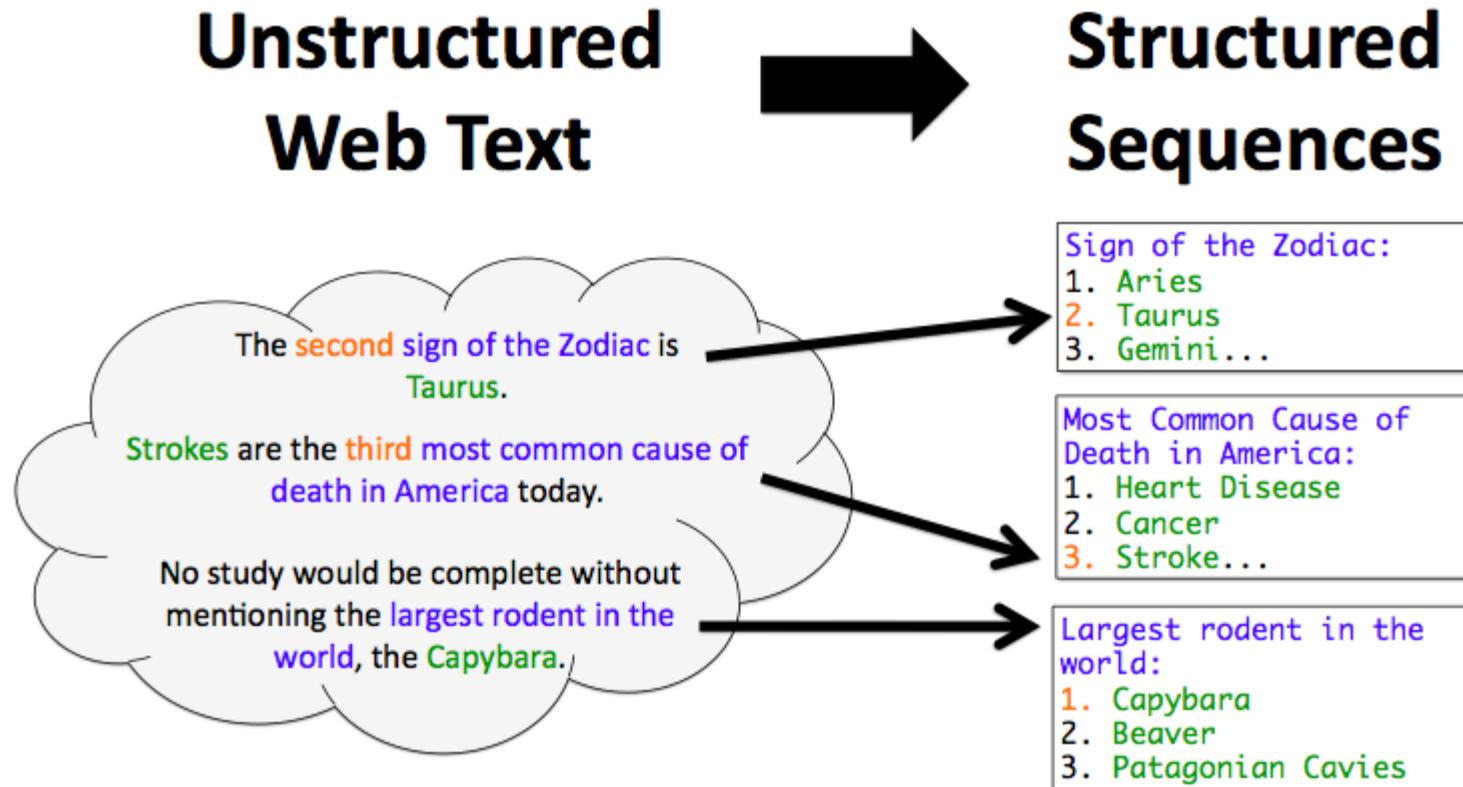
Code: The Hidden Language of Computer Hardware and Software
Charles Petzold
4.5 stars 334 reviews
#1 Best Seller in Machine Theory
Paperback \$17.99 ✓Prime



The Little Prover (MIT Press)
Daniel P. Friedman
4.5 stars 4 reviews
Paperback \$31.78 ✓Prime

Page 1 of 1

Information Extraction



http://seyferseed.ru/wp-content/uploads/2016/05/Screen_shot_2010-09-11_at_9.36.44_AM.png

Machine Translation

Google

DeepL

machine learning

Translation

Artificial Intelligence

Popular Posts



Google reveals the top things people want to find out 'How to' do a week ago



Ten years later, 'Sunshine' remains one of the bleakest and most beautiful sci-fi movies ever made 3 days ago



Xiaomi's first phone running stock Android looks impressive and costs less than \$250 3 days ago



Google Drive goes down and takes worldwide productivity with it

DeepL schools other online translators with clever machine learning

Posted Aug 29, 2017 by Devin Coldewey, Frederic Lardinois (@fredericl)



Tech giants Google, Microsoft and Facebook are all applying the lessons of machine learning to translation, but a small company called DeepL has outdone them all and raised the bar for the field. Its translation tool is just as quick as the outsized competition, but more accurate and nuanced than any we've tried.



Irish Lotto - Get 3 Lines for the Price of 1
MyLotto24



AdChoices

Crunchbase

Facebook

FOUNDED
2004

OVERVIEW

Facebook is an online social networking service that allows its users to connect with friends and family as well as make new connections. It provides its users with the ability to create a profile, update information, add images, send friend requests, and accept requests from other users. Its features include status update, photo tagging and sharing, and more. Facebook's profile structure includes ...

Autonomous Driving



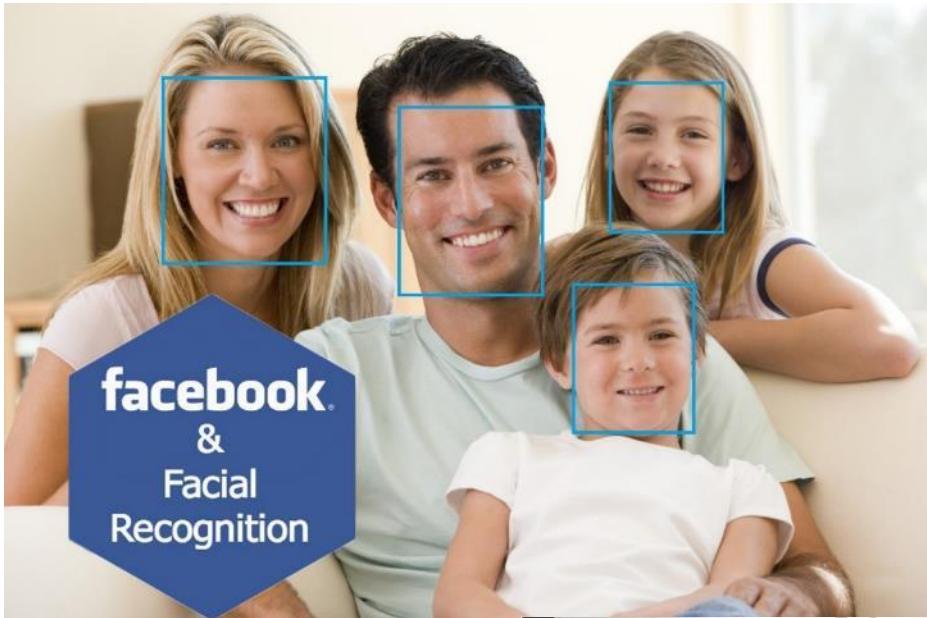
https://www.2025ad.com/fileadmin/user_upload/Evergreen/Mission/Challenges/Making_self_driving_safe/MAIN_IMAGE_16x9.jpg

Speech Recognition

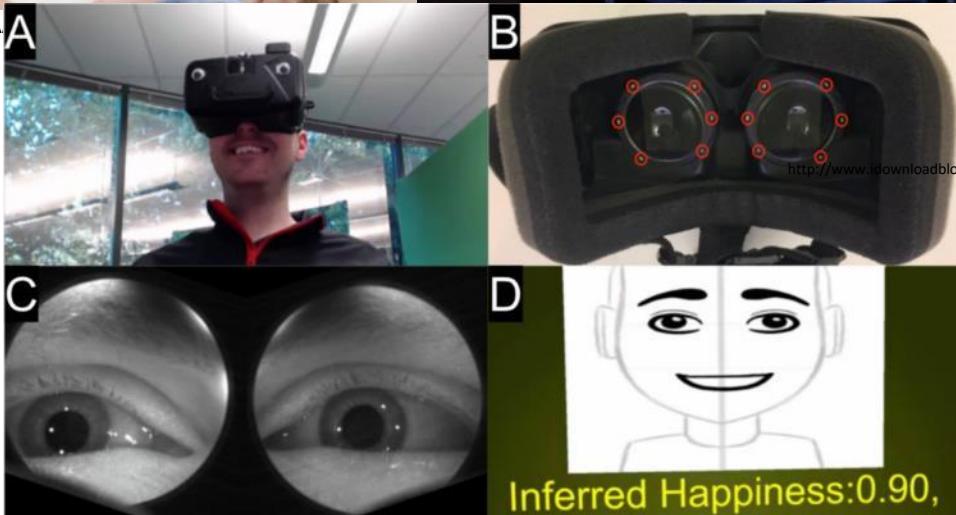


<http://cdn.iphoneincanada.ca/wp-content/uploads/2016/10/AppleSiri1TNW-1200x651.jpg>

Face Recognition



http://2.bp.blogspot.com/-uy3K0rhmEiE/Vne0r1Jv6yI/AAAface_recognition.jpg



<https://techcrunch.com/2017/07/28/using-eye-smiles-to-predict-the-state-of-your-whole-face-in-vr>

3D Face Reconstruction

<http://www.cs.nott.ac.uk/~psxasj/3dme/>

<http://aaronsplace.co.uk/papers/jackson2017recon/>

The screenshot shows a web browser window with the URL <http://www.cs.nott.ac.uk/~psxasj/3dme/>. The page title is "3D Face Reconstruction from a Single Image". Below the title, it says "Aaron S. Jackson, Adrian Balan, Vasiliou Argyrou and Georgios Tzimiropoulos Computer Vision Laboratory, The University of Nottingham". A paragraph explains the demo: "This is an online demo of our paper Large-Pose 3D Face Reconstruction from a Single Image via Direct Volumetric CNN Regression. Take a look at our [project webpage](#) to read the paper and get the code." It also instructs users to use a close-to-frontal image. The demo has processed 362,718 faces and 787,345 model views since July 7th of 2017. There are currently 2 faces being processed. Below this, there are sections for "Try your own face:" with a file upload input and "Upload Image" button, and "Try an example face:" with a grid of 16 pre-uploaded faces.

3D Face Reconstruction from a Single Image

Aaron S. Jackson, Adrian Balan, Vasiliou Argyrou and Georgios Tzimiropoulos
Computer Vision Laboratory, The University of Nottingham

This is an online demo of our paper Large-Pose 3D Face Reconstruction from a Single Image via Direct Volumetric CNN Regression. Take a look at our [project webpage](#) to read the paper and get the code.

Please use a (close to) frontal image, or the face detector won't see you (doh). Images and 3D reconstructions will be deleted within 20 minutes. They will not be used for anything other than this demo.

362,718 faces uploaded and 787,345 model views since 7th of September 2017.

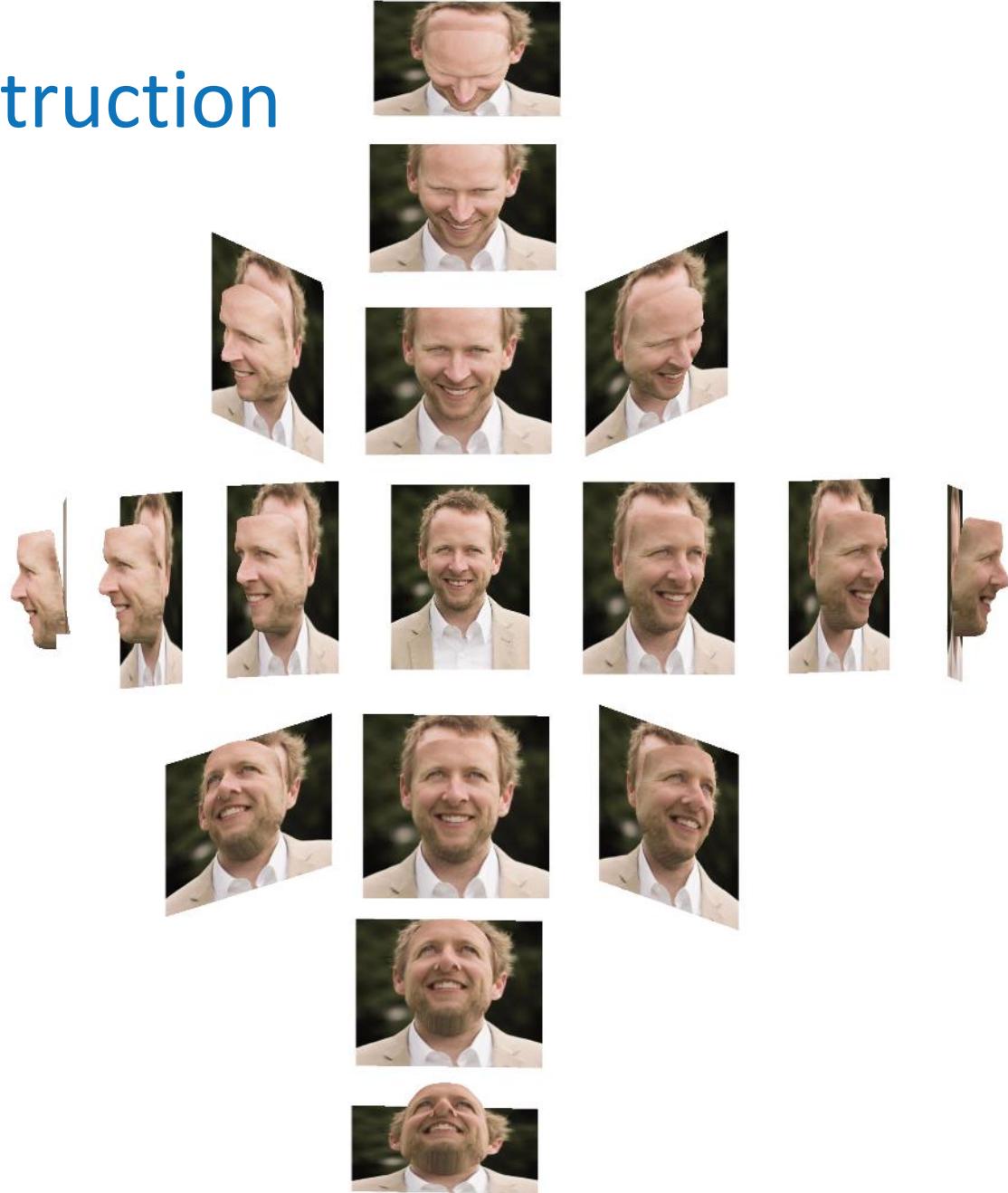
There are 2 faces being processed at the moment.

Select image to upload: Choose File No file chosen
 Upload Image

Try an example face:

AFLW2000 Image	Aaron Jackson (author)	AFLW2000 Image	Grace Hopper
Alan Turing	Barrack Obama	Elijah Wood	Marie Curie

aaron.jackson@nottingham.ac.uk (relative)



Medical Diagnosis



<https://ww2.kqed.org/futureofyou/wp-content/uploads/sites/13/2016/11/computerdoc-1020x680.png>

Employee Access Rights

The screenshot shows a web browser window titled "Amazon.com - Employee" with the URL <https://www.kaggle.com/c/amazon-employee-access-challenge>. The page header includes the "information security" logo and the Amazon logo. The main title is "Amazon.com - Employee Access Challenge". Below it, the text reads "Predict an employee's access needs, given his/her job role" and "5,000 · 1,687 teams · 4 years ago". A navigation bar at the top has tabs for "Overview" (which is underlined), "Data", "Discussion", "Leaderboard", and "Rules". The "Overview" section contains a sidebar with links for "Description", "Evaluation", "Prizes", "Timeline", and "Winners". The main content area features a decorative graphic of a wrought-iron fence with yellow vertical supports and black X-shaped patterns. Below the graphic is a detailed description of the challenge:

When an employee at any company starts work, they first need to obtain the computer access necessary to fulfill their role. This access may allow an employee to read/manipulate resources through various applications or web portals. It is assumed that employees fulfilling the functions of a given role will access the same or similar resources. It is often the case that employees figure out the access they need as they encounter roadblocks during their daily work (e.g. not able to log into a reporting portal). A knowledgeable supervisor then takes time to manually grant the needed access in order to overcome access obstacles. As employees move throughout a company, this access discovery/recovery cycle wastes a nontrivial amount of time and money.

<https://www.kaggle.com/c/amazon-employee-access-challenge>

Cropping Images

- <https://www.dpreview.com/news/6095193348/twitter-is-using-ai-to-intelligently-crop-photos-around-the-eye-catching-bits>

Before:



After:



Assigning Tasks to Employees

Y Meet the New Boss: The X

https://www.yahoo.com/tech/meet-the-new-boss-the-worlds-first-128660465704.html

Home Mail Flickr Tumblr News Sports Finance Celebrity Answers Groups Mobile More

YAHOO! TECH Search Search

Tech Home Reviews How To Deals Video Games Pogue Apple

We Welcome Our Robot Overlords

Meet the New Boss: The World's First Artificial-Intelligence Manager?

Yahoo Tech • September 9, 2015

[t](#) [f](#) [tw](#) [em](#)



Last week, the Japanese multinational conglomerate Hitachi quietly issued an [intriguing announcement](#). Apparently, the company has appointed its first AI boss.

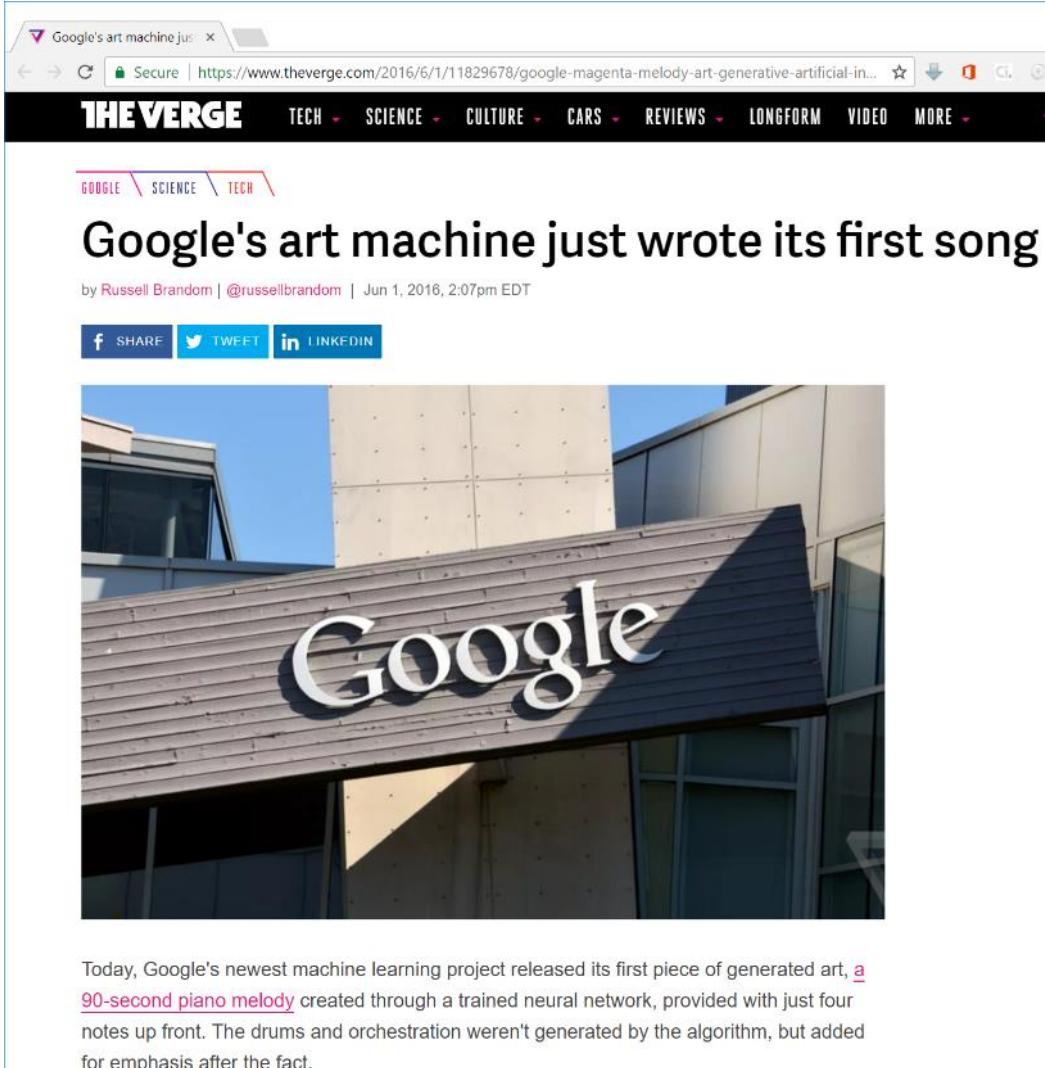
Well, kinda-sorta. The announcement details a new initiative in which artificial intelligence (AI) technology is being used to determine workflows and employee duties in real time. Specifically, an AI "boss" was put in charge of a warehouse management system, where it managed to effect an 8 percent increase in efficiency among its human servants-workers.

<https://finance.yahoo.com/news/meet-the-new-boss-the-worlds-first-128660465704.html>

Compose Music

Example of Aiva.ai:

<https://soundcloud.com/user-95265362/sets/genesis>



The screenshot shows a web browser window for 'Google's art machine just wrote its first song' on The Verge. The page includes the The Verge logo, navigation links for TECH, SCIENCE, CULTURE, CARS, REVIEWS, LONGFORM, VIDEO, and MORE, and category filters for GOOGLE, SCIENCE, and TECH. Below the title, it says 'by Russell Brandom | @russellbrandom | Jun 1, 2016, 2:07pm EDT'. There are social sharing buttons for Facebook, Twitter, and LinkedIn. A large image of a Google building with a 'Google' sign is displayed.

Today, Google's newest machine learning project released its first piece of generated art, a [90-second piano melody](#) created through a trained neural network, provided with just four notes up front. The drums and orchestration weren't generated by the algorithm, but added for emphasis after the fact.

<https://www.theverge.com/2016/6/1/11829678/google-magenta-melody-art-generative-artificial-intelligence>

Create and Extend Art

Innovations

This algorithm can create a new Van Gogh or Picasso in just an hour

By Matt McFarland August 31, 2015



The algorithm was given this photo of buildings, left, and a copy of Vincent Van Gogh's "The Starry Night." In about an hour it taught itself to mimic Van Gogh's style, and apply it to the photo of the buildings. (University of Tuebingen)

For great artists, creating a masterpiece is the culmination of a career. Years of practice, creative musings and experimentation with styles build up to the genesis of something truly original and timeless.

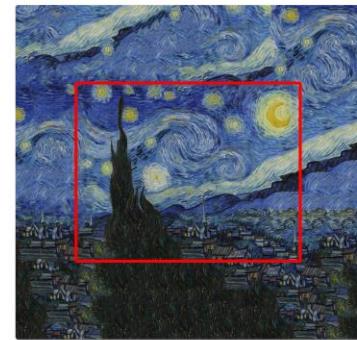
A story is often told about Pablo Picasso charging an enormous sum for a portrait. The

EXTRAPOLATED ART PAINTINGS ONLY GIVE A PEEK INTO A SCENE.

New techniques in machine learning and image processing allow us to extrapolate the scene of a painting to see what the full scenery might have looked like. Click on a painting to extrapolate it.

Update: extrapolated art has won Art of Engineering photo competition (2nd prize)
Media coverage: Art of Engineering • iFLScience • The Telegraph • Daily Mail • Whatfrom blog • Hacker News • Kotaku • Boing Boing (by Cory Doctorow) • Gizmodo • Habrhabr.

STARRY NIGHT (VAN GOGH)



https://www.washingtonpost.com/news/innovations/wp/2015/08/31/this-algorithm-can-create-a-new-van-gogh-or-picasso-in-just-an-hour/?utm_term=.783a59c7da3d

<http://extrapolated-art.com/>

Taking Care of Elderly



<https://www.good.is/articles/robots-elder-care-pepper-exoskeletons-japan>

Satisfy Sexual Needs

THE SUN, A NEWS UK COMPANY ▾

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UK Edition ▾ | Search 

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All News | UK News | US News | World News | Politics | Opinion

ROBOT PHWOARS World's first brothel staffed entirely by robot sex workers now looking for investors to go global

Lumidolls opened its first controversial bordello in Barcelona, Spain in February

By Jon Lockett
30th July 2017, 12:47 pm | Updated: 31st July 2017, 7:29 pm

   3 COMMENTS

THE owners of the world's first brothel staffed by robot sex workers are reportedly in talks to open others around the globe.

Lumidolls opened its first controversial sex outlet in Barcelona, Spain in February – near the city's popular tourist spots.



<https://www.thesun.co.uk/news/4131258/worlds-first-brothel-staffed-entirely-by-robot-sex-workers-now-looking-for-investors-to-go-global/>

Predict Personality/Traits/Preferences/...

AI can tell from photo whether you're gay or straight

Stanford University study ascertained sexuality of people on a dating site with up to 91 per cent accuracy

Fri, Sep 8, 2017, 10:14 | Updated: Fri, Sep 8, 2017, 11:11

Image from the Stanford study. Photograph: Stanford University.

<https://www.irishtimes.com/life-and-style/people/ai-can-tell-from-photo-whether-you-re-gay-or-straight-1.3214062>

Kill Enemies

PM Kalashnikov Will Make an A.I.-Powered Killer Robot

What could possibly go wrong?



Kalashnikov photo.

By Kyle Mizokami Jul 19, 2017

854 [f](#) [t](#) [m](#)

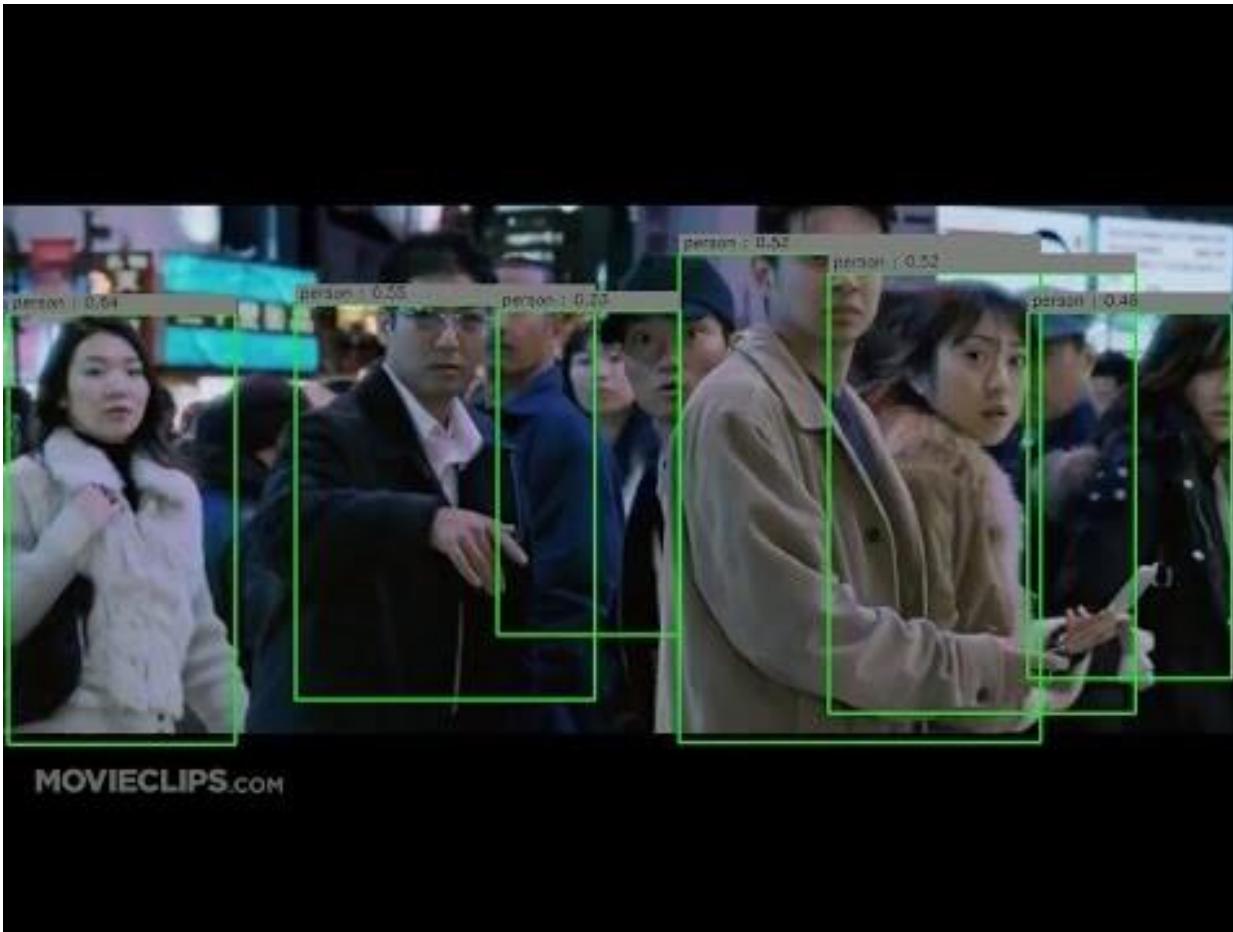
Russian weapons maker Kalashnikov is working on an automated gun system that uses artificial intelligence to make "shoot/no shoot" decisions. But exactly how this AI or any other decides who is a combatant and who isn't is at the heart of a raging debate over allowing autonomous weapons on battlefields filled with both soldiers and civilians.

The Kalashnikov "combat module" will include a 7.62-millimeter machine gun coupled

<http://www.popularmechanics.com/military/weapons/news/a27393/kalashnikov-to-make-ai-directed-machine-guns/>

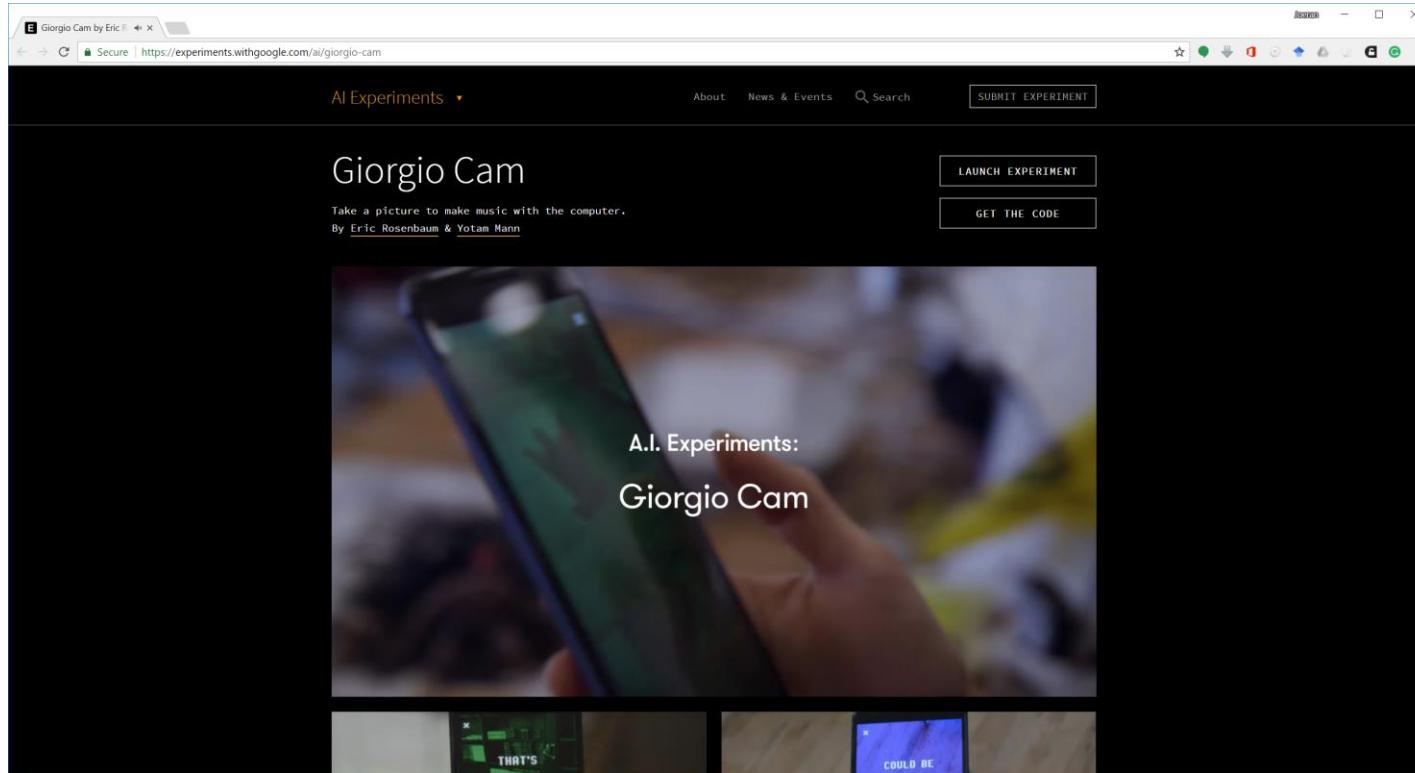
Object Recognition

<https://www.youtube.com/watch?v=EJy0El3hfSg>



Object Recognition (2)

- <https://experiments.withgoogle.com/ai/giorgio-cam/view/>
- <https://experiments.withgoogle.com/ai/giorgio-cam>





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Introduction to the Module

Module Structure & Grading

- **Lectures**
 - 22 lectures, 1 hour each, 2 per week
- **Some lab sessions**
- **Assessment**
 - Exam, 2 hours (60% of the final grade)
 - Course Work (40% of the final grade)
 - Supplemental Exam, 2 hours (100%)

Lectures

(Subject to change)

- | | |
|---|---|
| 1. Week: Introduction | other topic (recommender systems?) |
| 2. Week: Linear Regression | |
| 3. Week: Classification & Probabilistic Interpretation | 10. Week: Neural Networks |
| 4. Week: SVM & Kernel Methods | 11. Week: Deep Learning |
| 5. Week: Data Processing and ML Frameworks | 12. Week: TBA (Adversarial ML; Ethics; Curriculum Learning; Meta Learning; ...?) |
| 6. Week: ML Evaluation | Plus: Critical Thinking, Project Management, and Professional Communication |
| 7. Week: Study Week | |
| 8. Week: Unsupervised Learning | |
| 9. Week: Guest Lectures and one | |

Course/Project Work

- **Course work = 40% of final marks**
- **Individual Programming Assignments (10%)**
 - Linear Regression
 - Logistic Regression
 - Support Vector Machines
 - Unsupervised Machine Learning
- **Group Research Assignments**
 - Goal: Answer a simple research question
 - How strong is the impact of dataset size on machine learning effectiveness?
 - How consistent are different evaluation metrics?
 - How effective are neural networks in solving simple problems?
 - Poster (10%)
 - Short Paper (20%)
- **Group Building**
 - Groups consist of 3 students
 - Ideally self selected, otherwise random group building
 - More details soon

Exam

- **A mix of**
 - Multiple choice
 - Open-answer questions
 - Potentially Calculations/programming (on paper)
- **Example exams (and answers) will be provided**

Schedule / Deliverables (2018-09-22)

Subject to changes

- All deadlines are 8:00 o'clock in the morning (Irish time), if not stated otherwise
- This schedule may be changed during the next weeks. Changes will be announced during lectures and/or on Blackboard

Teaching Week (!= Term Week)	Lecturer	Lecture Title	Labs	Deadlines
Week 1	Joeran	Intro to the module		
		Intro to ML		
Week 2	Doug	Linear Reg. I		
		Linear Reg. II		
Week 3	Doug	Classification	Lab: Academic Writing & Research Project Introduction	
		Probabl. Interpretation		28th September; Group Preferences
Week 4	Doug	SVM		
		Kernel Methods		3rd October; Own Project Ideas (1st Chance) 5th October; Programming I (Linear Regression) 5th October; Project Preferences (1st Chance)
Week 5	Joeran	Data Handling and ML Frameworks		
		Feature Selection		12th October; Programming II (Logistic Regression)
Week 6	Joeran	Evaluation I		
		Evaluation II		15th October; Own Project Ideas (Last Chance) 18th October; Project Preferences (Last Chance) 19th October; Programming III (Support Vector Machines)
Week 7		Study Week		
Week 8	Doug	Unsupervised Learning I		29th October; Research I
		Unsupervised Learning II		
Week 9	Doug & Joeran	Guest Lecture		
	Doug	Recommenders ?		
Week 10	Joeran	Neural Nets I		
		Neural Nets II		16th November; Programming IV (Unsupervised Learning)
Week 11	Joeran	Neural Nets III (Deep Learning)		
		Neural Nets IV (Deep Learning)		
Week 12	Joeran	Misc (Ethics, Adversarial ML, Metalearning, Currc. Learning)		
		Recap; Lecture Evaluation		2nd December; Research II

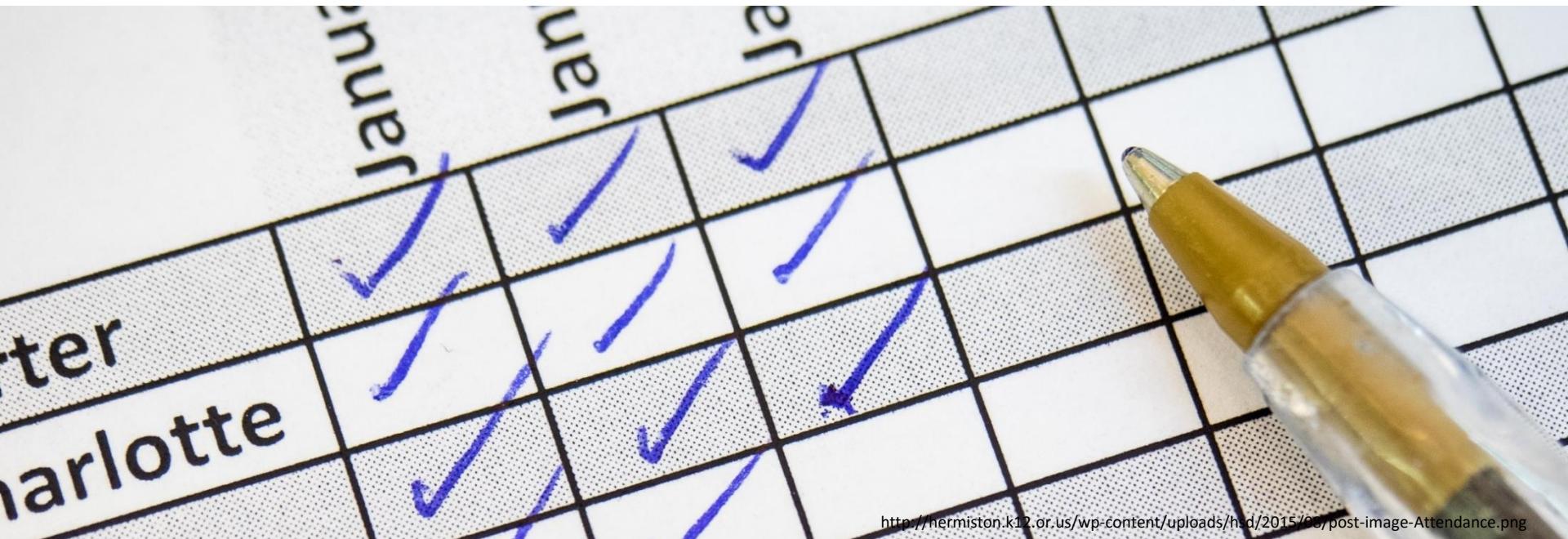


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Expectations & Rules

Attendance

- Attendance is optional (not for guest lecture though) but recommended.
- If you attend, be on time!
- You don't need to inform us, if you don't attend
- In case of serious sickness: get a medical confirmation and let the administration (and us) know.



<http://hermiston.k12.or.us/wp-content/uploads/hcd/2015/03/post-image-Attendance.png>

Our Expectations

- **We begin and conclude the lecture; you acknowledge via knocking on the desks (German style 😊)**
- **If you attend lectures:**
 - Be on time, sharp!
 - Only lecture-related use of electronic devices
 - No noisy typing
 - No talking
 - No phone ringing (switch to silent/airplane mode)
 - Unpack your stuff before the lecture begins, and pack your stuff after the lecture concludes



Lecture Slides

- **Lecture Slides are available on Blackboard. Slides are typically available a few hours or days before the lecture starts. However, it may be that we upload updated versions of the slides either after the lecture or some minutes before the lecture begins.**

The screenshot shows a Blackboard interface. At the top, there is a blue header bar with the Trinity College Dublin logo and the text "Blackboard learn". Below the header, there is a navigation bar with icons for Home, Logout, and a search bar. The main content area has a title "Lecture Slides". On the left, there is a sidebar for the module "CS4404-A-Y-201718 (MACHINE LEARNING)". The sidebar includes links for Announcements, Discussion Boards, and Lecture Slides. The main content area displays a file titled "ML, wk 01-1 -- Introduction to the Module.pdf" with a file size of 6.894 MB. Attached Files: ML, wk 01-1 -- Introduction to the Module.pdf

Contacting us

- **Whenever something could be relevant for others**
- Blackboard forum
- Send us email reminder if you don't get an answer within 2 working days
- **For sensitive/private matters: Email**
 - Always to both joeran.beel@scss.tcd.ie & doug.leith@scss.tcd.ie
 - Email subject
 - Use “[ML1819]” as prefix (e.g. “[ML1819] Cannot attend guest lecture”).
 - Meaningful subjects (“~~[ML1819]~~ appointment” vs. “[ML1819] Request for appointment to discuss group-project problems (team 141)”)“
 - No files via email (instead, send Dropbox/gDrive link etc.)
 - New email-threads for new topics: When you want to discuss a new topic, please do not hit the “reply” button in an existing email thread. Instead, create a new email with a new subject. For instance, if you have previously sent an email titled “Questions about internship at NII in Tokyo”, do not send an email in the same thread to ask when you can hand in the assignment for the Machine Learning course. Instead, create a new email titled e.g. “ML research assignment 1 hand-in date”.
 - Some more advise https://www.scss.tcd.ie/joeran.beel/students_corner/communication-guidelines/

The screenshot shows the Blackboard learn+ interface for the CS4404-A-Y-201718 (MACHINE LEARNING) module. The top navigation bar includes the Trinity College Dublin logo, the module name, and links for My Learning Space, Student Help, and Staff Help. A 'Discussion Boards' link is highlighted in the main menu. The left sidebar features a navigation tree with 'CS4404-A-Y-201718 (MACHINE LEARNING)' expanded, showing 'Announcements' and 'Discussion Boards'. Below this is the 'MODULE MANAGEMENT' section with links for 'Control Panel' (which is expanded to show 'Files', 'Module Tools', 'Evaluation', 'Grade Centre', and 'Users and Groups') and 'Customisation'. The main content area is titled 'Discussion Boards' and contains two sections: 'Student Forum' and 'Questions to the Lecturers'. The 'Student Forum' section states: 'You can use this forum to discuss whatever you want with your fellow students from the Machine Learning module. You can discuss in this forum how to use a particular machine-learning framework, if someone wants to build a team with you for the group work, We, the lecturers, will not necessarily look into this forum or answer to questions.' The 'Questions to the Lecturers' section states: 'If you have questions that you would usually send via email, but that might be relevant for other students, too, please post them here. Please minimize the effort to reply to a question, i.e., think about which information we will need to answer your question, and then provide this information. Remember that if you need to send an email to us, use the prefix [ML1819] in your email subject.'

(Negative) Example

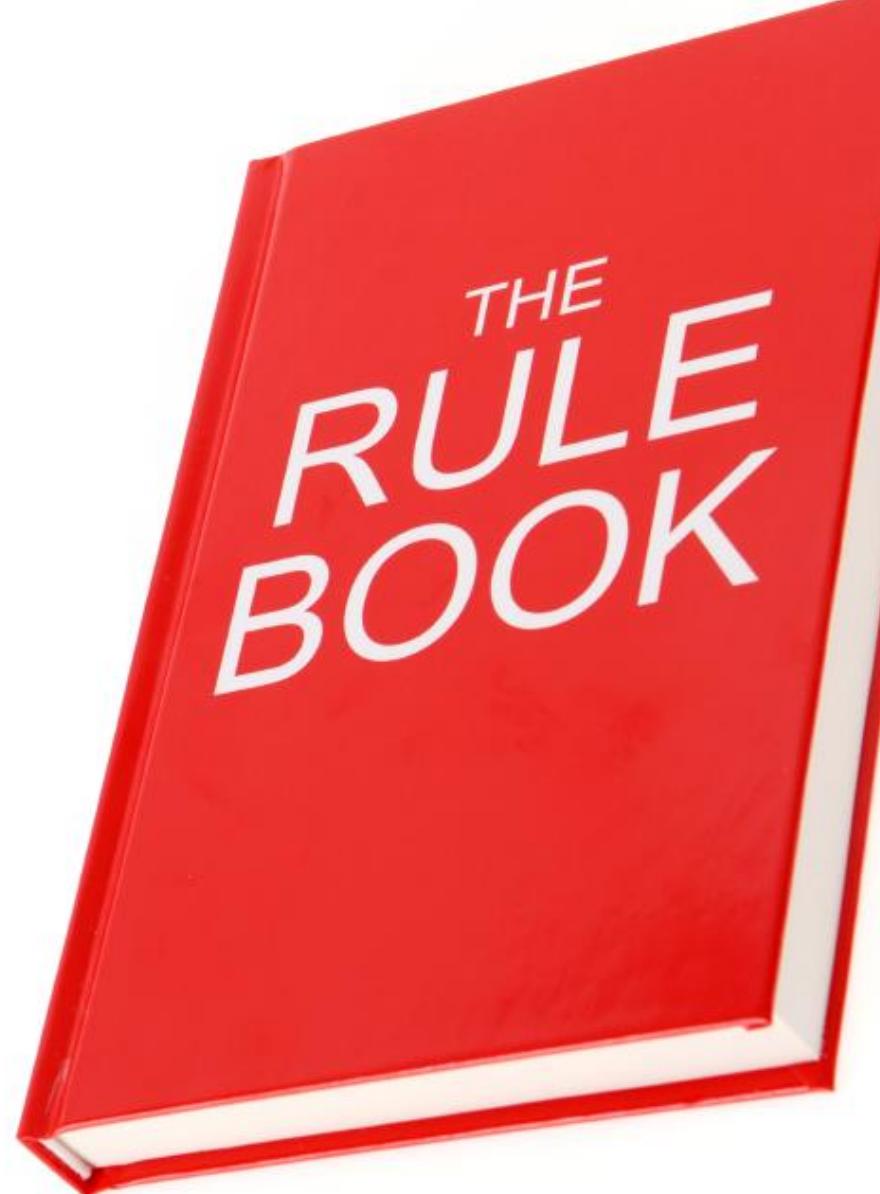
The screenshot shows a Google Mail inbox search results page. The search query entered is '"dissertation" OR "final year project"'. The results are displayed in a list format, showing 1-100 of many messages. A red box highlights a cluster of messages related to final year projects. The messages listed include:

- Inbox Final Year Project -
- Dissertation Project Proposal -
- Dissertation - Projects inquiry -
- Requesting an appointment for dissertation -
- M.Sc. Dissertation
- Query about a potential Final Year Project
- Requesting an appointment for dissertation
- ML Dissertation Supervision
- Final Year Project
- Your Final Year Project Offers -
- Final Year Project -
- Master Project
- Dissertation choice -
- I'm interested in your Final Year Project options -
- Final Year Project Supervisor and project proposal -

The rest of the inbox contains messages from 'Joeran' with subject lines like 'Joeran (3)', 'Joeran (2)', etc. The inbox sidebar includes links for 'Compose', 'Inbox', 'Starred', 'Sent Mail', 'Drafts', 'All Mail', 'Spam', and 'Trash'. The bottom right corner of the interface shows the Windows activation status.

Rules

- **Plagiarism: If we catch you, you fail the entire module (or worse). We run plagiarism checks with tools like Turnitin; Moss; ...**
- **Deadlines are deadlines. Even 1 minute late is too late. Only exception: serious illness (medical certificate required).**
- Penalty for a late marked deliverable (e.g. assignment): 0 marks for that deliverable
- Penalty for a late unmarked deliverable (e.g. project preference submission): deduction of 3 marks from final coursework marks.
- **Let us know about (potential) problems as soon as possible. Telling us one day before a deadline that you had a cold three weeks ago, is no excuse.**



Group Work Guidelines

- **In case of group work, penalties apply to all team members. Advise: Think about how to prevent problems once the teams are build (agree about rules, take meeting minutes, exchange contact details, have a backup plan for sickness, accidents, or low motivation of team members, ...). Most importantly: have written evidence of all important decisions!**
- **Underperformance in group work: If team members feel that one team member strongly underperforms, the following steps are to be taken, as soon as possible**
 - The team tries to find a solution with the particular team member in a personal discussion as soon as possible.
 - If the particular team member continues to underperform, the team contacts the lecturer, and provides written evidence (meeting minutes, emails, ...) of the ongoing underperformance and the team's attempts to find a solution.
 - The lecturer will schedule a meeting with all team members, or discusses the matter via email. Depending on the evidence, the lecturer may decide to reduce the course work marks of the particular's team member by up to 50% (e.g. 30 marks instead of the group's 60).
 - If the particular team member continues to underperform, the team contacts the lecturer again, and provides written evidence of the ongoing underperformance.
 - In another meeting or email, the lecturer may decide to deduct further marks from the particular team member, and, if necessary, to remove the team member from the team (resulting in 0 marks for the course work for that team member)

(Critical/Constructive) Feedback and Ideas

Always welcome!!! Even by email ;)



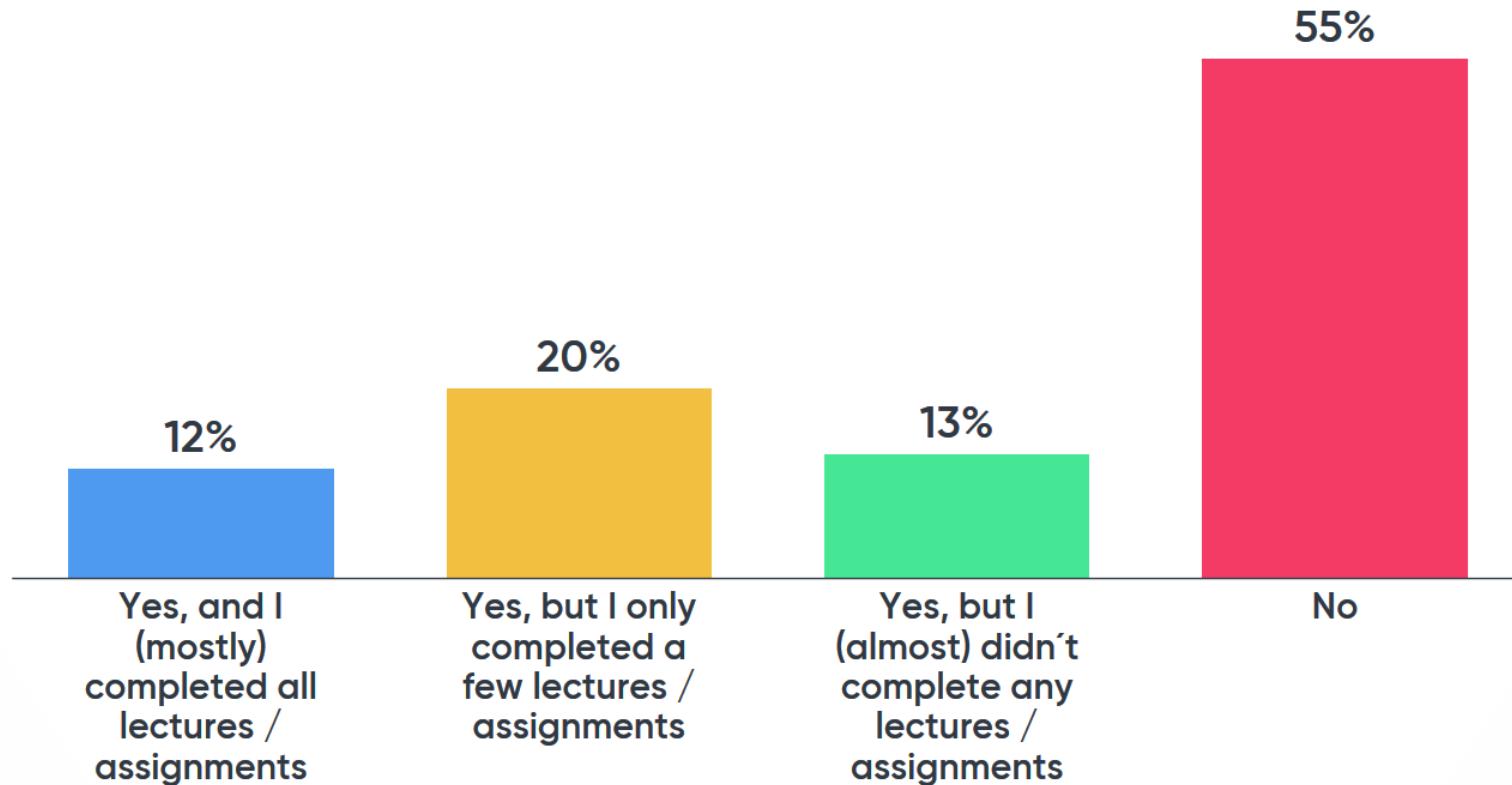
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You

Go to www.menti.com and use the code 85 70 15

Mentimeter

Did you ever enroll to some online Machine Learning course (e.g on Coursera ...)

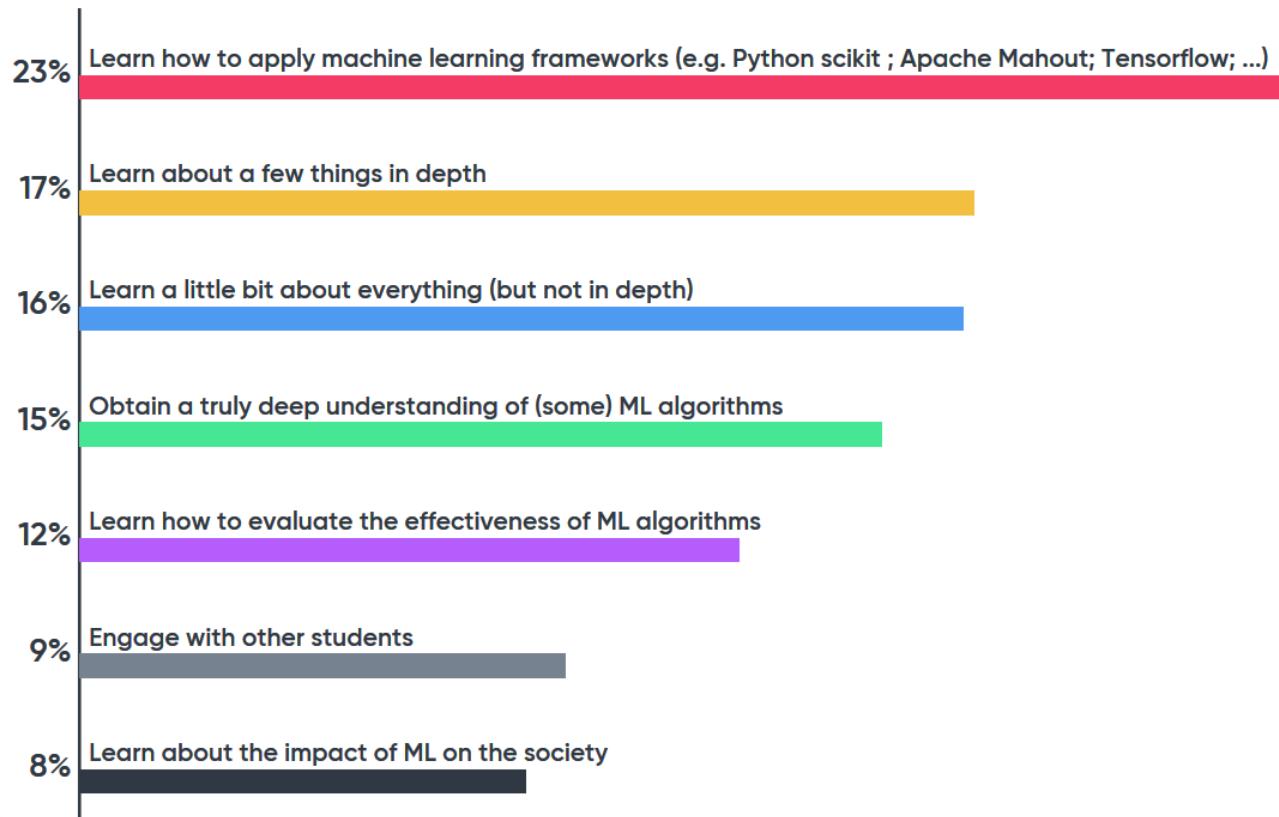


Slide is not active

Activate

129

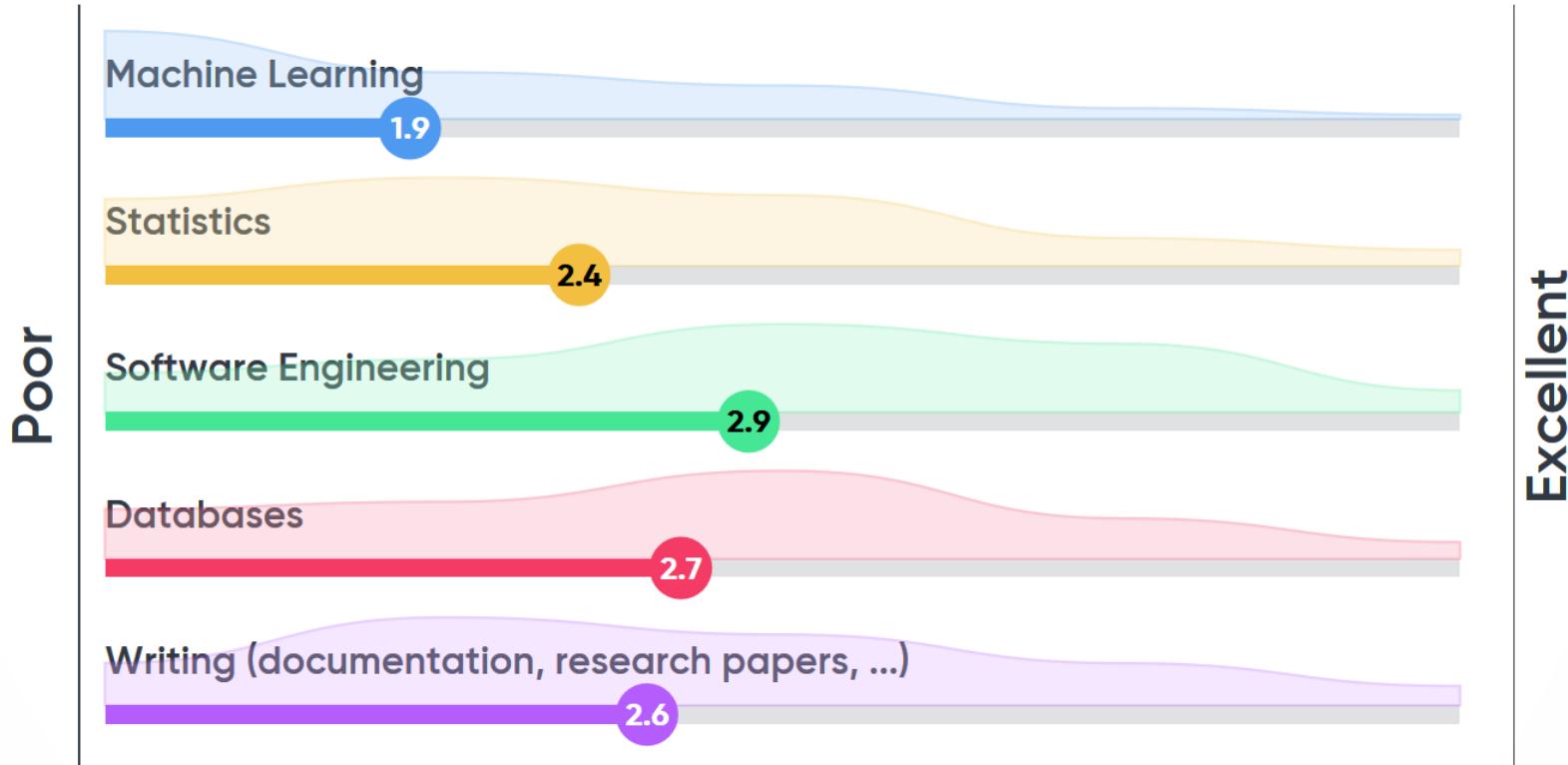
What are your expectations for the module?



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Activate

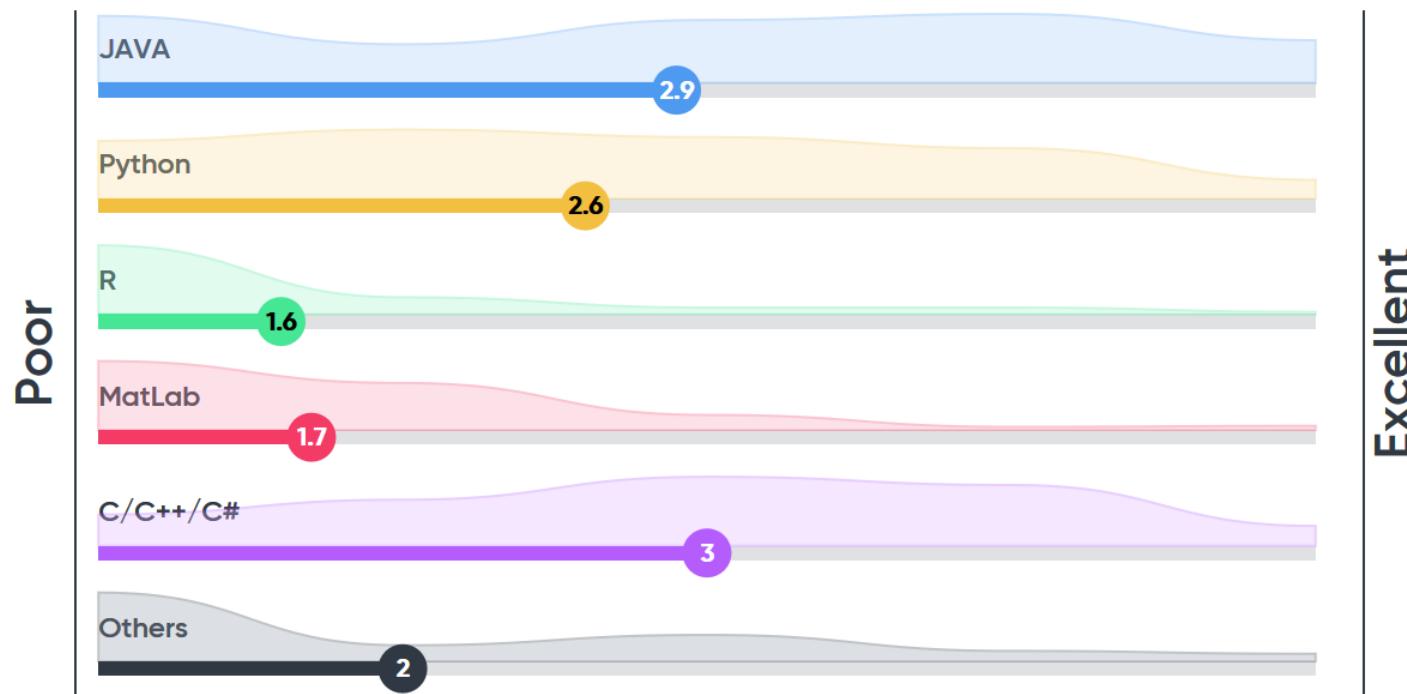
Knowledge/Skills in ...



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Knowledge in Programming Languages



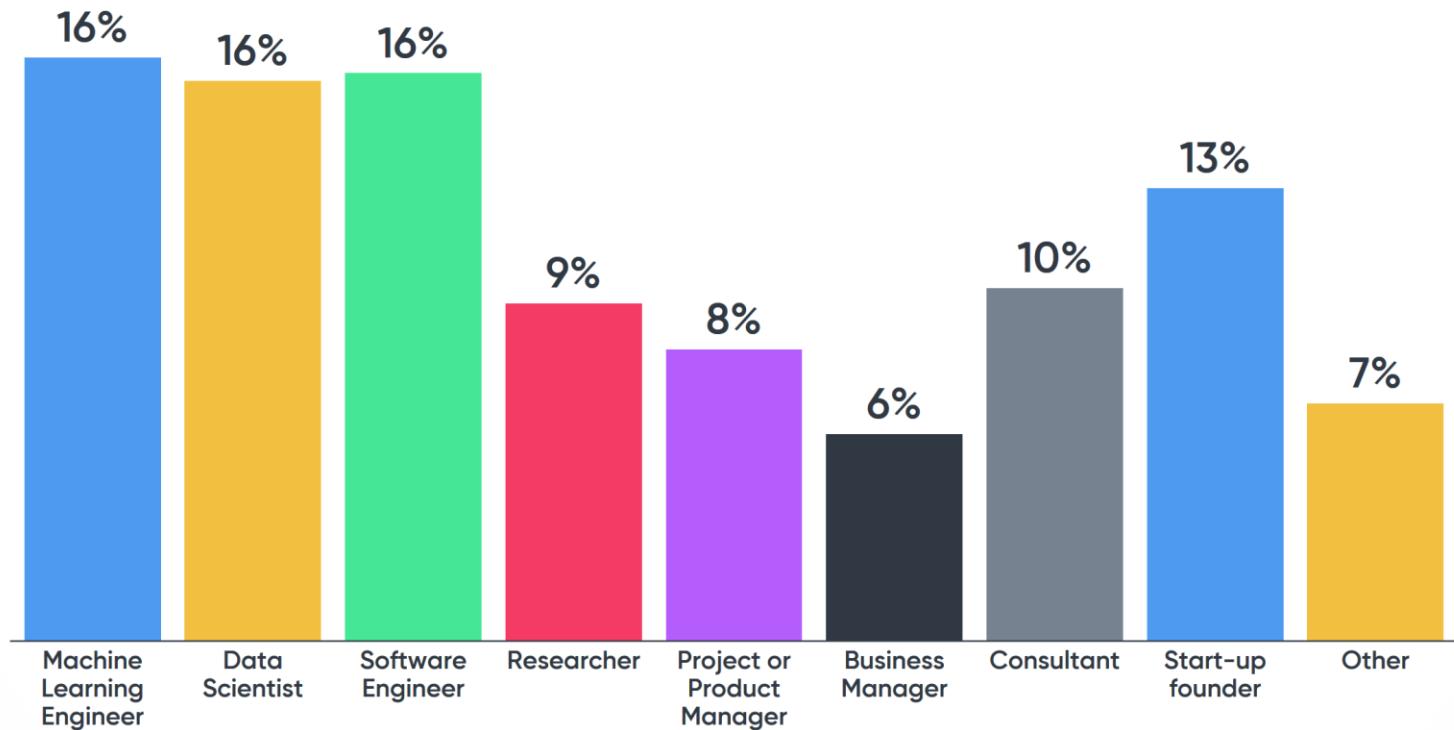
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Go to www.menti.com and use the code 85 70 15

Mentimeter

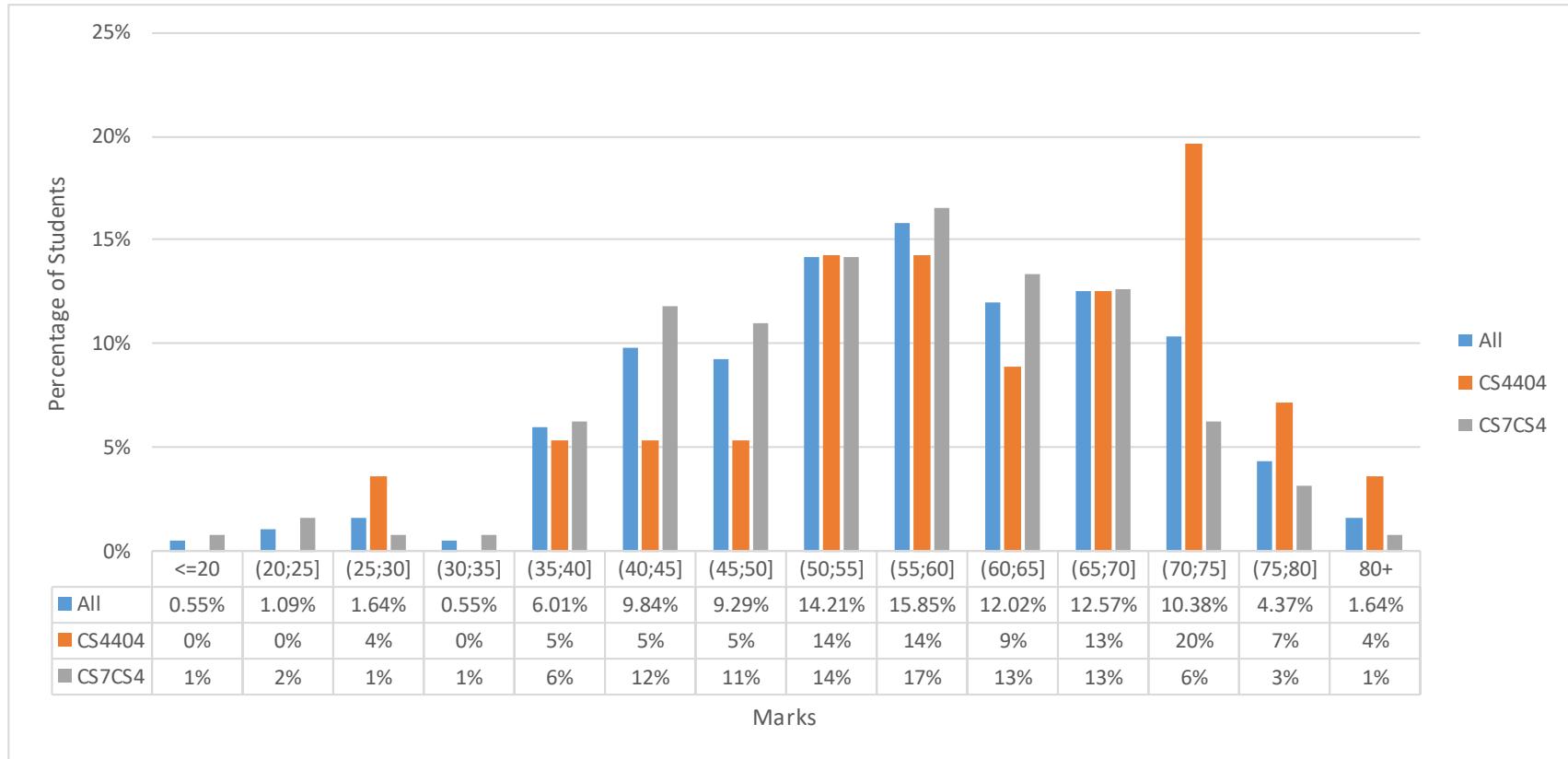
What careers are attractive to you?



Literature Recommendations

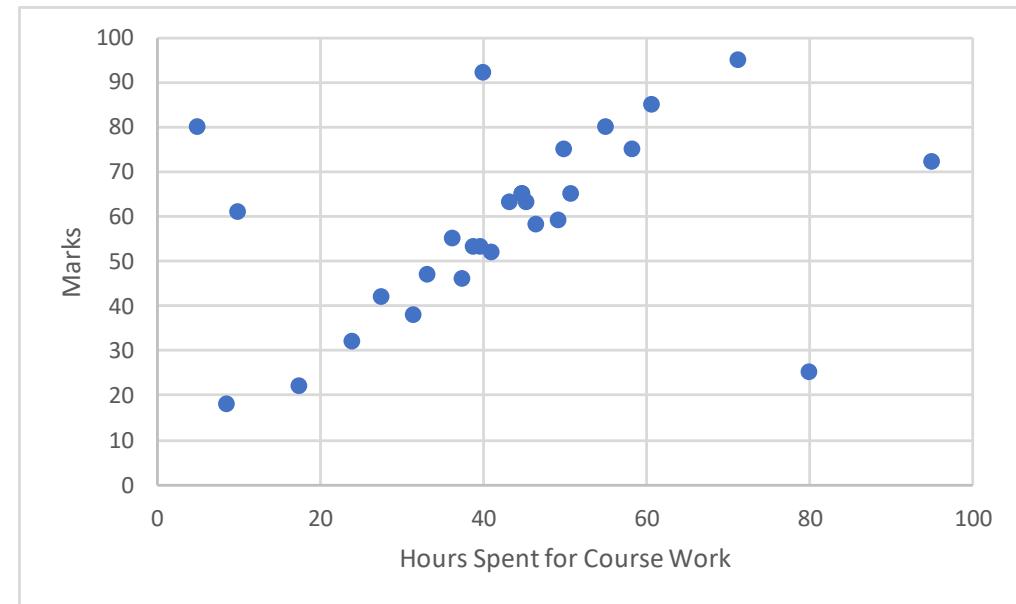
- Books
 - Aurélien Géron, ***Hands on Machine Learning with scikit-learn and Tensorflow*** (O'Reilly Media, 2017)
 - Henrik Brink, Joseph Richards, and Mark Fetherolf, ***Real-world machine learning*** (Manning Publications Co., 2016)
 - John Paul Mueller and Luca Massaron, ***Machine Learning for Dummies*** (John Wiley & Sons, 2016)
 - Michael Nielsen, Neural Networks and Deep Learning
<http://neuralnetworksanddeeplearning.com/>
 - Machine Learning Yearning, Andrew Ng, Book In Progress
<http://www.mlyearning.org/>
- Online Courses
 - <https://www.udemy.com/machinelearning/>
 - <https://www.coursera.org/learn/machine-learning>
- The World Wide Web
 - Kaggle
 - KD Nuggets
 - Google AI Blog
 - Vaultanalytics
<https://vaulitanalytics.com/ai-applications/>
 - O'Reilly AI Newsletter
<https://www.oreilly.com/ai/newsletter.html>
 - TechCrunch

Last Year's Marks



A Machine Learning Problem (Example)

- A student tells you that she spent 90 hours for the Machine Learning module (course work, exam preparation, ...). How many marks do you think she will receive?
- Without information difficult to answer
- Have a look at her fellow students
 - x = Time spent
 - y = Achieved marks
- Now, again: How many marks will she receive?
10, 20, 30 ... 90, 100?





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Thank you