



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. If you email, email both joeran.beel@scss.tcd.ie and doug.leith@scss.tcd.ie. Give a meaningful subject, starting with "[ML1920]". No file attachments.

Week 01 (1): Introduction to the Module

CSU44061/CS7CS4 Machine Learning

Version 1

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

Outline

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

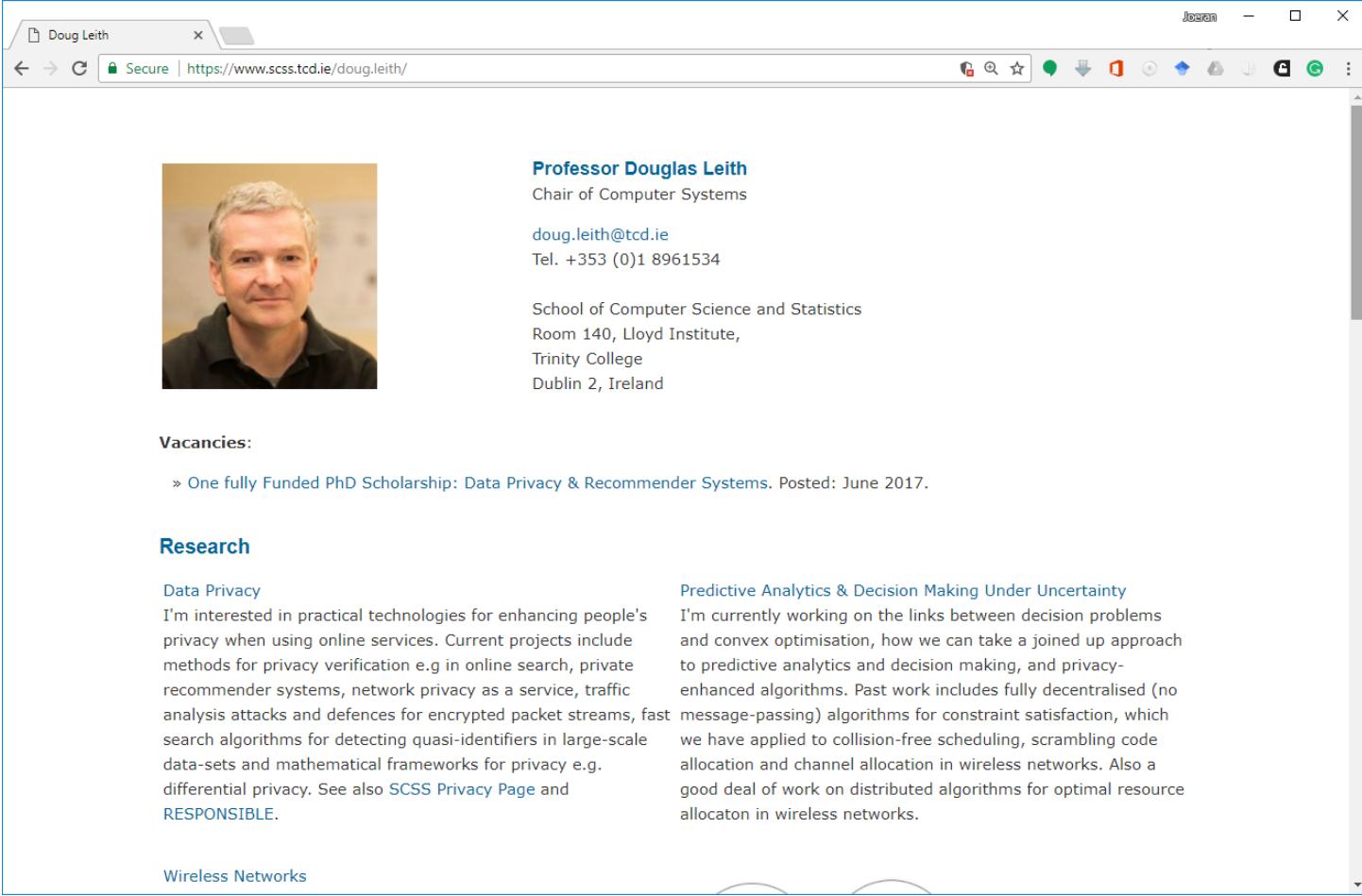


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The Lecturers

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 (Chair of Computer Systems, email doug.leith@tcd.ie, phone Tel. +353 (0)1 8961534), and his 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

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

The screenshot shows a website for Prof. Joeran Beel at Trinity College Dublin. The header includes the Trinity College Dublin logo, the URL 'scss.tcd.ie/joeran.beel/' in the address bar, and a navigation menu with links to Home, People, Publications, Research, Projects, Industry, Students, Jobs, Contact, and Blog. A search icon is also present. The main content features a large banner image of a tree in front of a stone building. Overlaid on the banner is the title 'Working Group of Dr. Joeran Beel' and the subtitle 'Ussher Assistant Professor in Intelligent Systems'. Below this is a text box containing a paragraph about the group's research interests and a row of small profile pictures of the team members.

We are part of the [ADAPT Research Centre](#) as well as of the [Knowledge and Data Engineering Group \(KDEG\)](#) in the Artificial Intelligence (AI) Discipline at the School of Computer Science and Statistics at Trinity College Dublin. We work on automated machine learning (AutoML) & meta-learning, data science, information retrieval (IR), natural language processing (NLP), the blockchain and other technologies, in areas including recommender systems, algorithm selection, news analysis, plagiarism detection, and document engineering. Domains we are particularly interested in include digital libraries & digital humanities, eHealth, tourism, law, FinTech, and mobility.



Trinity College Dublin
Galway & Worcester Hallie Club
The University of Dublin

Joeran Beel

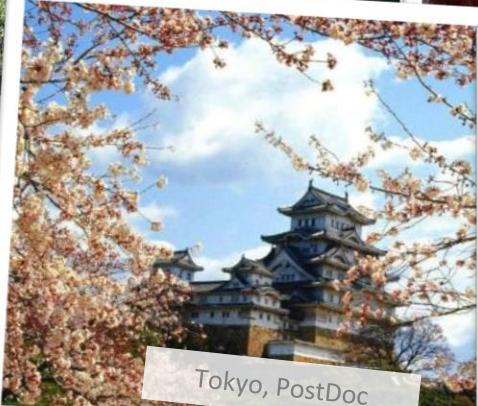
Lancaster, MSc Project Mgmt.



Sydney, Business Administration



Tokyo, PostDoc



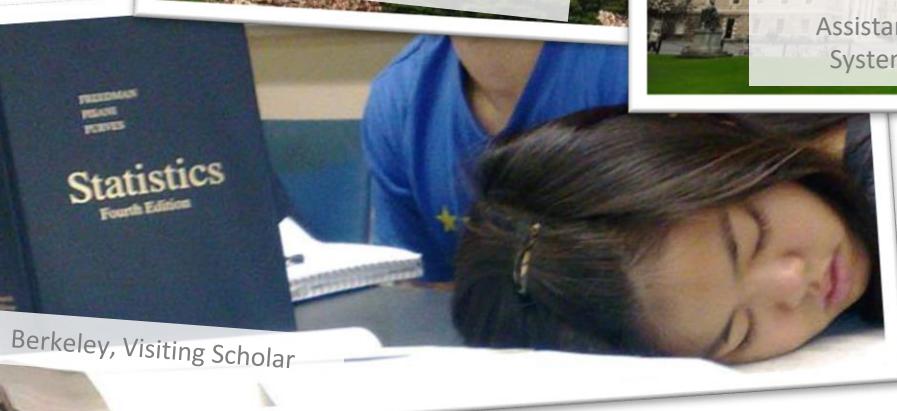
Munich, Product Manager



Konstanz, PostDoc



Assistant Professor for Intelligent Systems, Trinity College Dublin



Berkeley, Visiting Scholar

Magdeburg, PhD in Comp. Science



Magdeburg, BSc & MSc Business Inf. Systems

Please 😊

**I begin and conclude
the lecture; you
acknowledge via
knocking on the desks
(German style 😊)**



Earrach Sakura Award

https://scss.tcd.ie/postgraduate/structuredphd/earrach_sakura_award.php

The screenshot shows a web browser window for the 'Earrach Sakura Award - School of' page at scss.tcd.ie/postgraduate/structuredphd/earrach_sakura_award.php. The page is part of the Trinity College Dublin website, as indicated by the logo and header.

The main content area features a large photograph of a lake with mountains in the background, and a small boat with two people on it in the foreground. The text on the page describes the Earrach Sakura award, stating it is given twice a year to exceptional PhD students at SCSS, allowing them to spend three to six months at the National Institute of Informatics (NII) in Tokyo for a fully funded research internship. It also mentions the award's name originates from the Gaelic word 'earrach' (spring) and the Japanese word 'sakura' (cherry blossom).

The left sidebar contains a navigation menu for the Postgraduate section, including links for Computer Science, Interactive Digital Media, Statistics, PhD Programme (with Course Structure, Apply, Local Access, and Contact Us), Ethics, Module Descriptors 2019-2020, Timetables, Appeals, and Local Information.

The top navigation bar includes links for Faculties and Schools, Courses, Research, A-Z, and a search bar for 'Search School of Computer Science and S'.

Life in Tokyo and Japan



Life in Tokyo and Japan



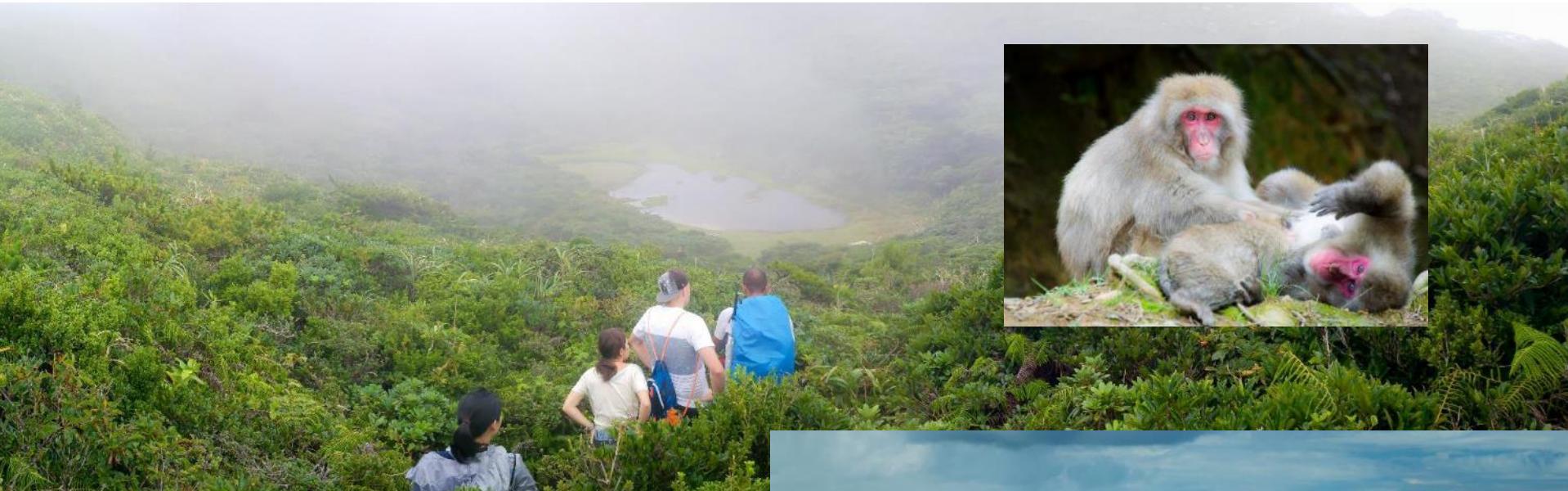
Life in Tokyo and Japan



Life in Tokyo and Japan



Life in Tokyo and Japan



Final Year Projects / Dissertations

- Find a supervisor soon
- Projects: <https://projects.scss.tcd.ie>
- My projects
 - https://projects.scss.tcd.ie/author/beelj/?post_type=project
 - <https://joeranbeel.atlassian.net/wiki/spaces/BEEL/pages/133333043/Final-Year+Projects+Dissertations>



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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

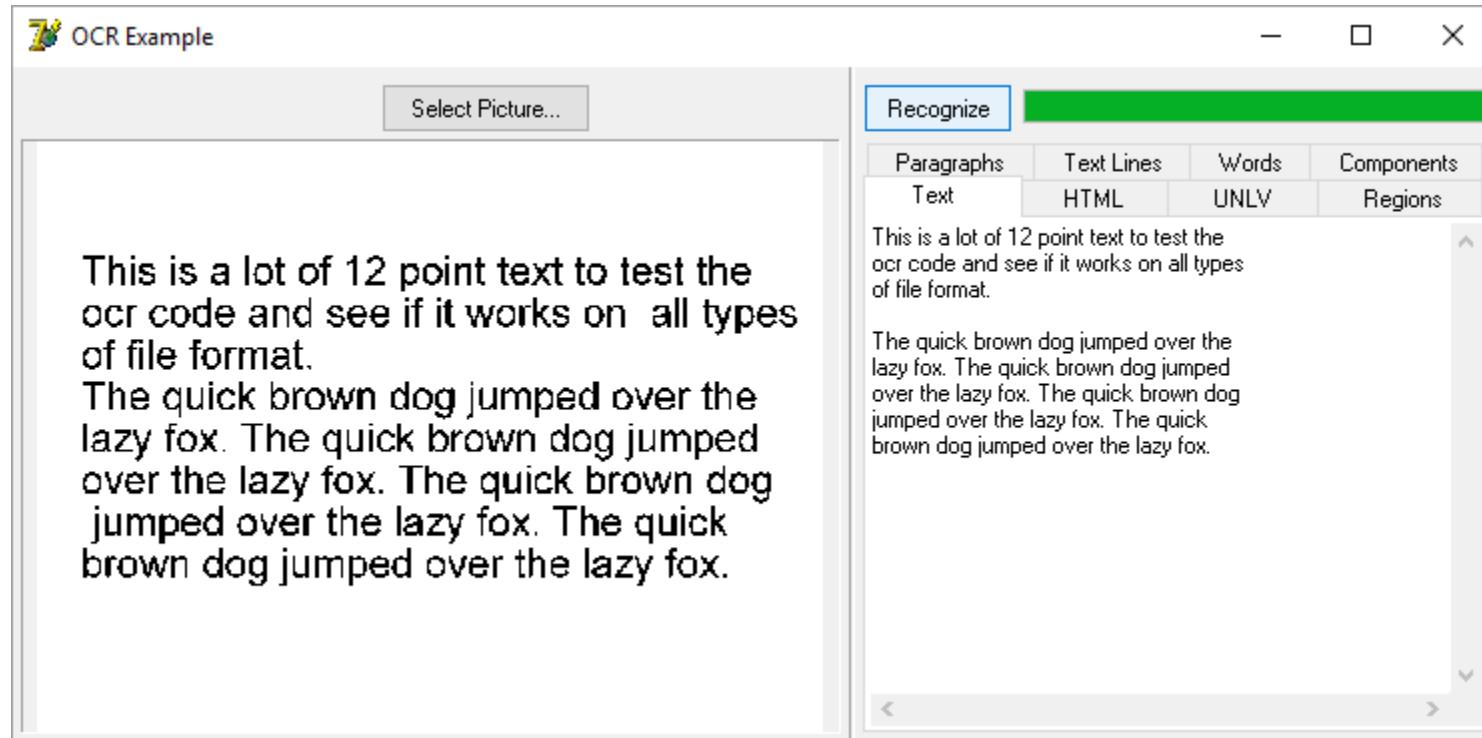
- <https://www.youtube.com/watch?v=PCBTZh41Ris>



- <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>

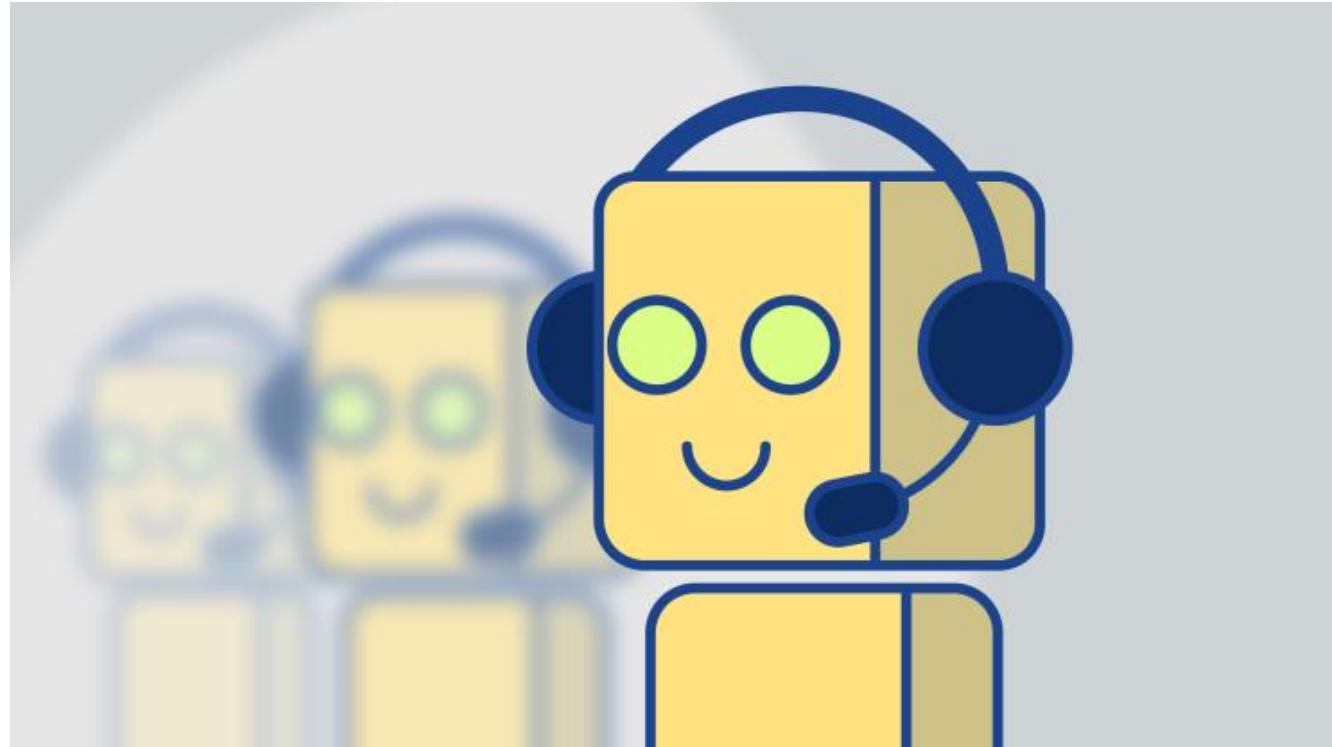
Fraud Detection



<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



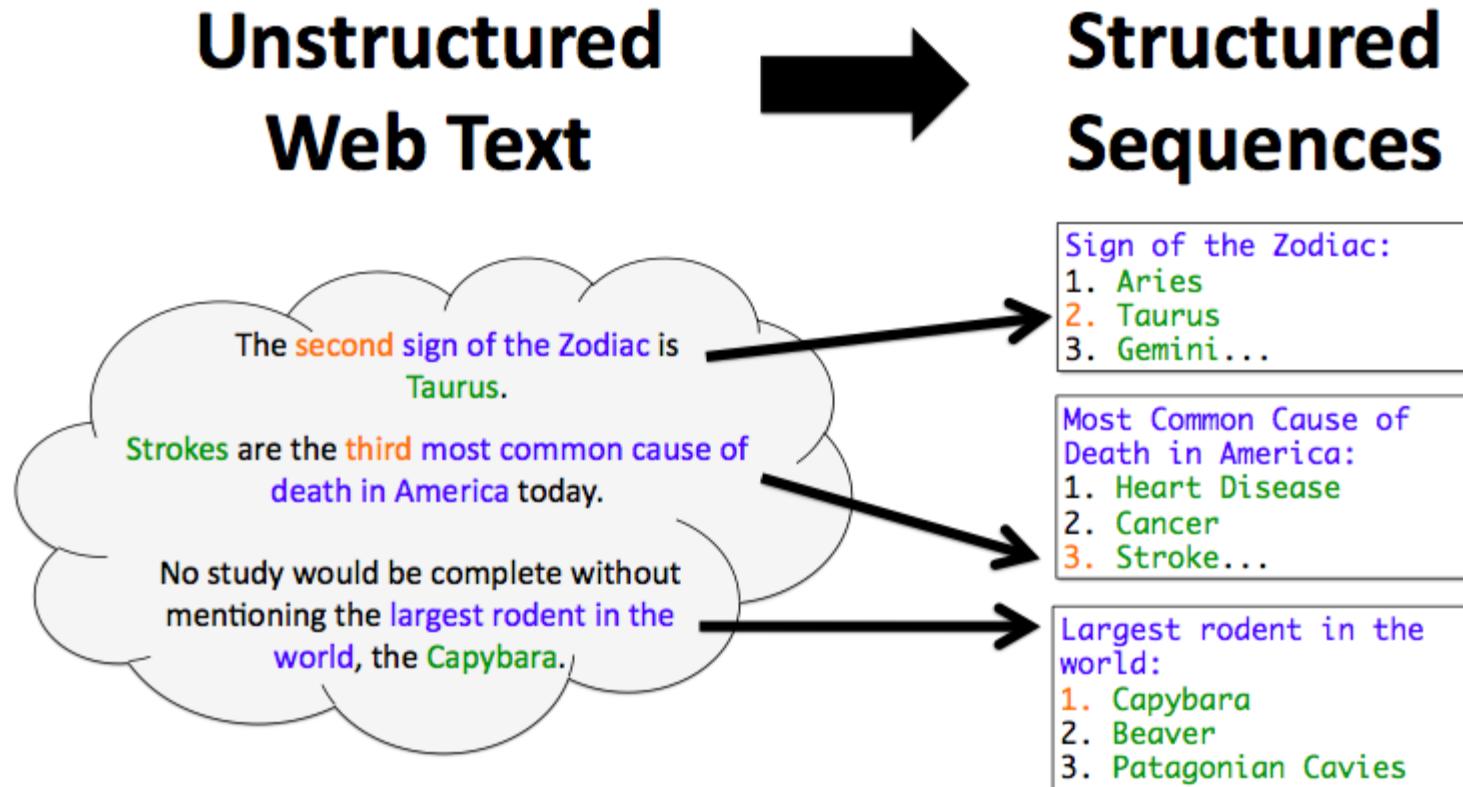
- This item: Structure and Interpretation of Computer Programs - 2nd Edition (MIT Electrical Engineering and... by Harold Abelson Paperback \$50.50
 The Pragmatic Programmer: From Journeyman to Master by Andrew Hunt Paperback \$32.59

Customers Who Bought This Item Also Bought

 The Little Schemer - 4th Edition by Daniel P. Friedman 4.5 stars, 64 reviews Paperback \$36.00 ✓Prime	 Instructor's Manual t/a Structure and Interpretation of Computer Programs... by Gerald Jay Sussman 4.5 stars, 5 reviews Paperback \$28.70 ✓Prime	 The Pragmatic Programmer by Andrew Hunt 4.5 stars, 328 reviews Paperback \$32.59 ✓Prime	 Introduction to Algorithms, 3rd Edition (MIT Press) by 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 by Greg Michaelson 4.5 stars, 23 reviews Paperback \$20.70 ✓Prime	 Purely Functional Data Structures by Chris Okasaki 4.5 stars, 19 reviews Paperback \$40.74 ✓Prime	 Code: The Hidden Language of Computer Hardware and Software by Charles Petzold 4.5 stars, 334 reviews #1 Best Seller in Machine Theory Paperback \$17.99 ✓Prime	 The Little Prover (MIT Press) by Daniel P. Friedman 4.5 stars, 4 reviews Paperback \$31.78 ✓Prime
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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



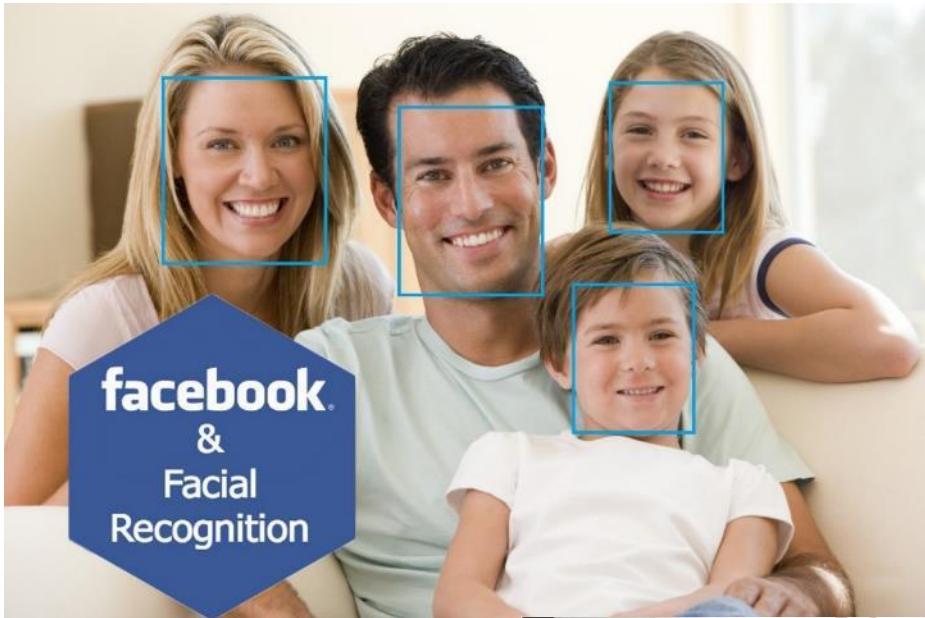
https://www.2025ad.com/fileadmin/user_upload/Evergreen/Mission/Challenges/Making_self_driving_safe/MAIN_IMAGE_16x9.jpg

Speech Recognition

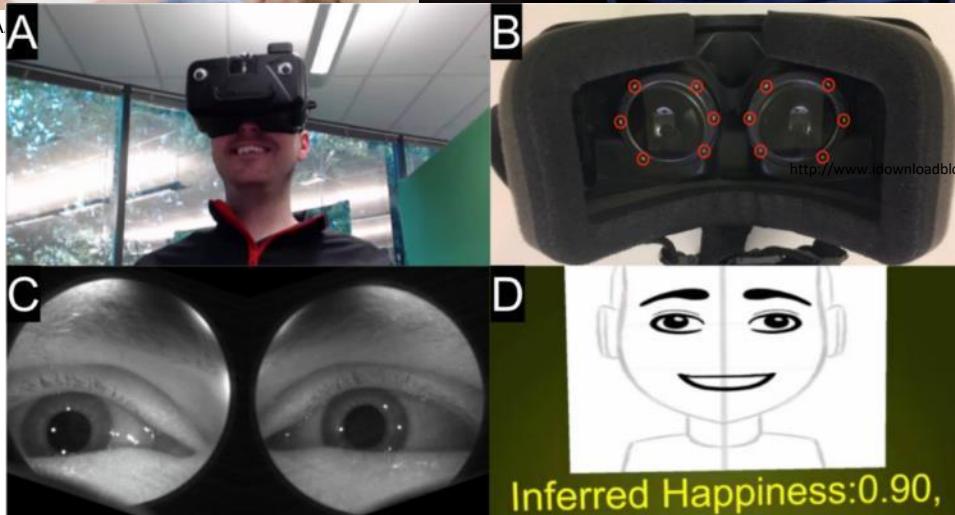


<http://cdn.iphoneincanada.ca/wp-content/uploads/2016/10/AppleSiri1TNW-1200x651.jpg>

Face Recognition



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



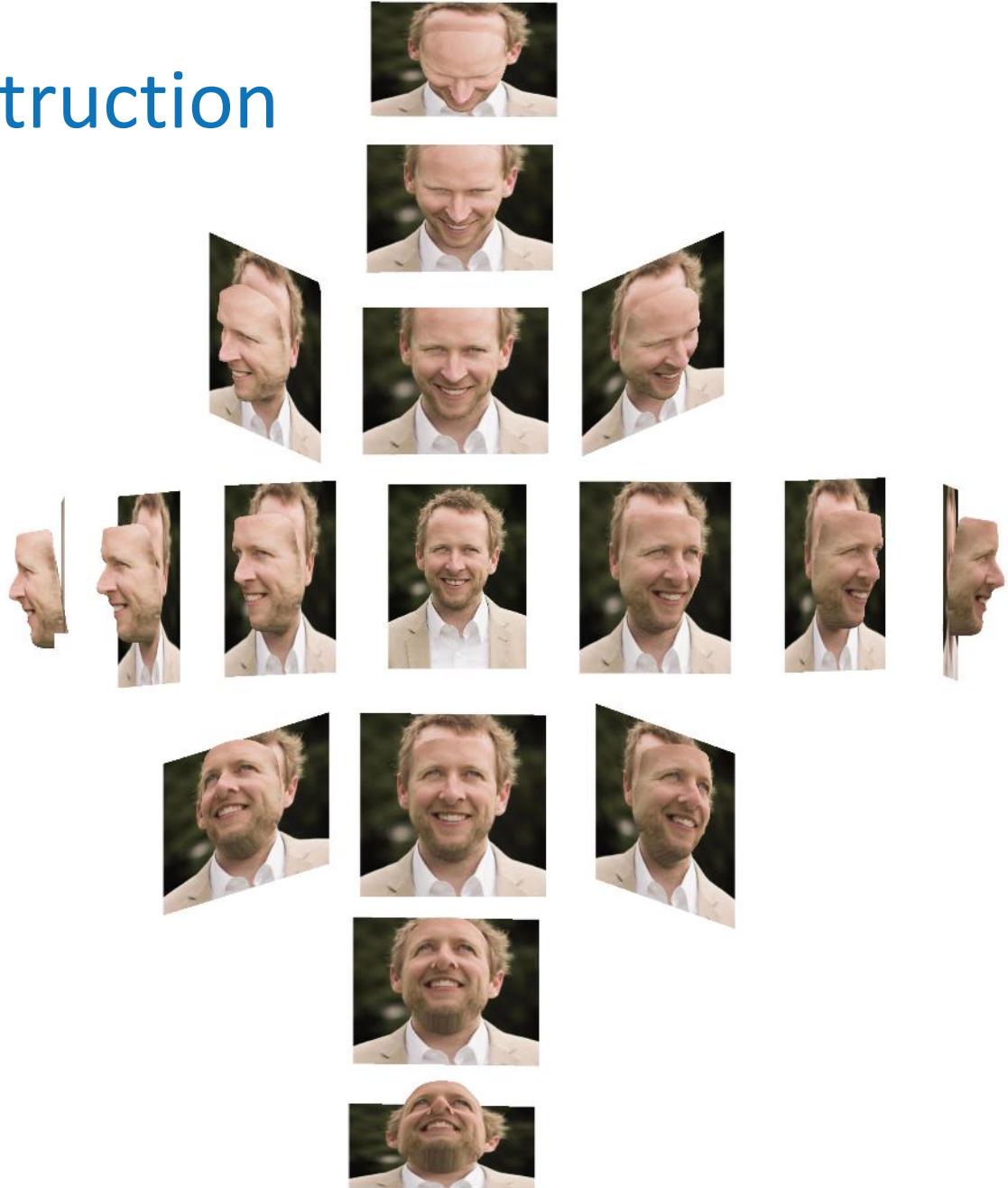
<https://techcrunch.com/2017/07/28/using-eye-smiles-to-predict-the-state-of-your-whole-face-in-vr>

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 upload a close-up frontal image. The page stats show 362,718 faces uploaded and 787,345 model views since 7th of September 2017. There are 2 faces being processed at the moment. At the bottom, 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 sample images.



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 wrought-iron fence graphic with yellow vertical supports. Below the graphic, a paragraph explains 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:

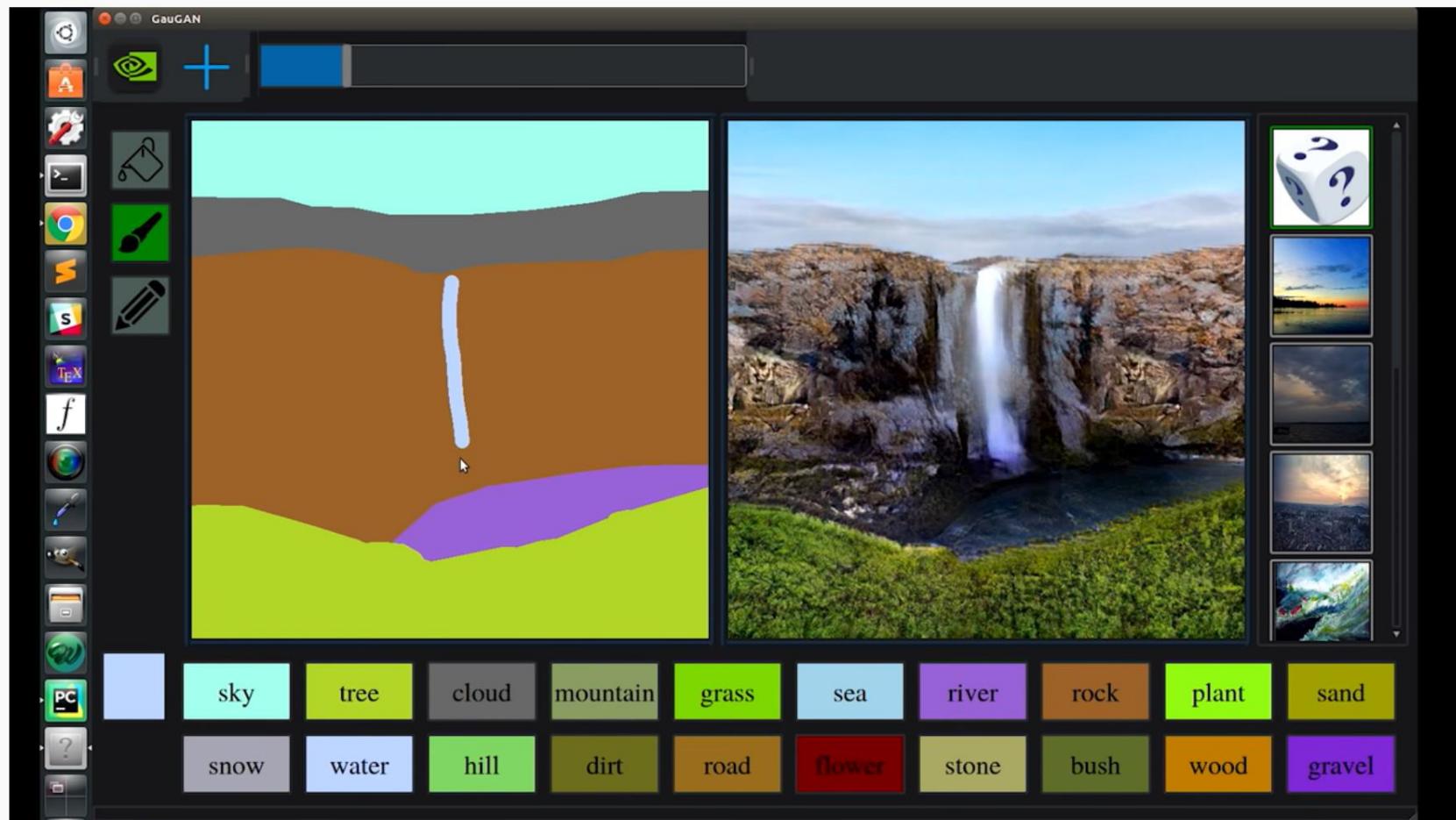


After:



Draw Landscapes

<https://www.youtube.com/watch?v=p5U4NgVGAwg>



#NVResearch #GTC19

GauGAN: Changing Sketches into Photorealistic Masterpieces

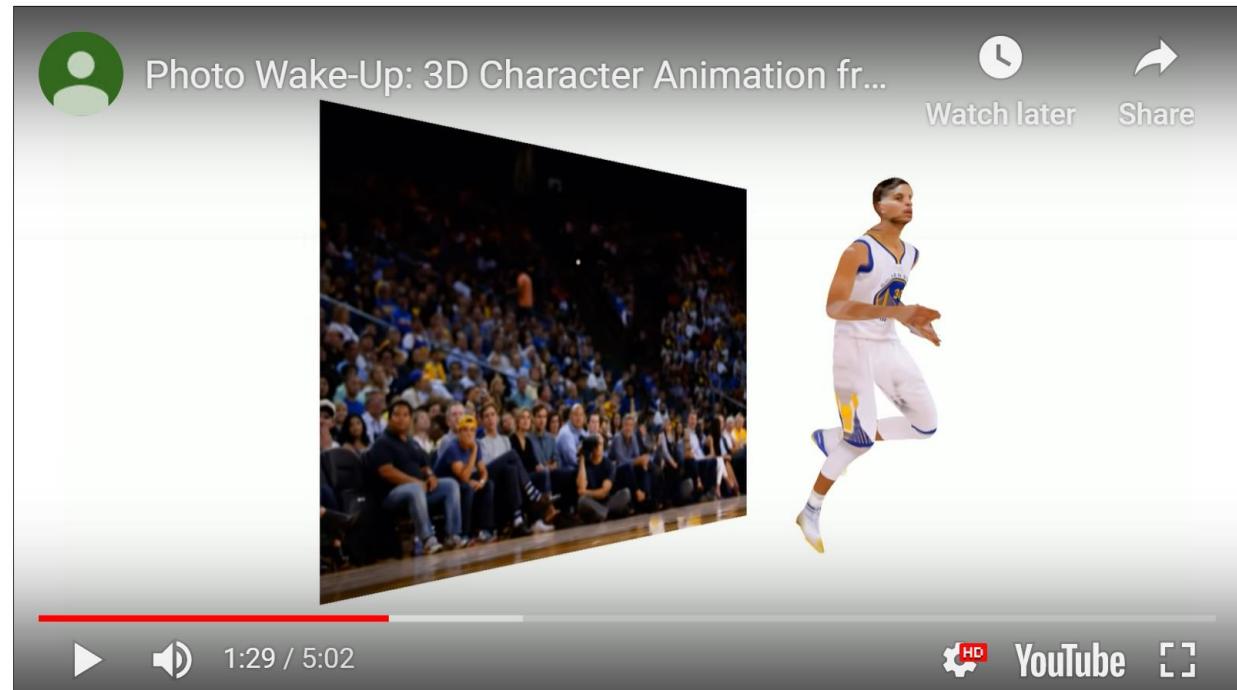
Animate Still Images

<http://www.dpreview.com/news/6843849919>this-ai-that-can-generate-a-3d-walking-model-from-a-single-still-image-or-painting>

This AI that can generate a 3D walking model from a single still image or painting

Published Jun 19, 2019 | Brittany Hillen

 Like 64  Share  Tweet



Researchers with the University of Washington and Facebook have [detailed](#) a method using artificial intelligence to animate a person using a single still image. The algorithm is called Photo Wake-Up, and it will be presented at the Conference on Computer Vision and

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.

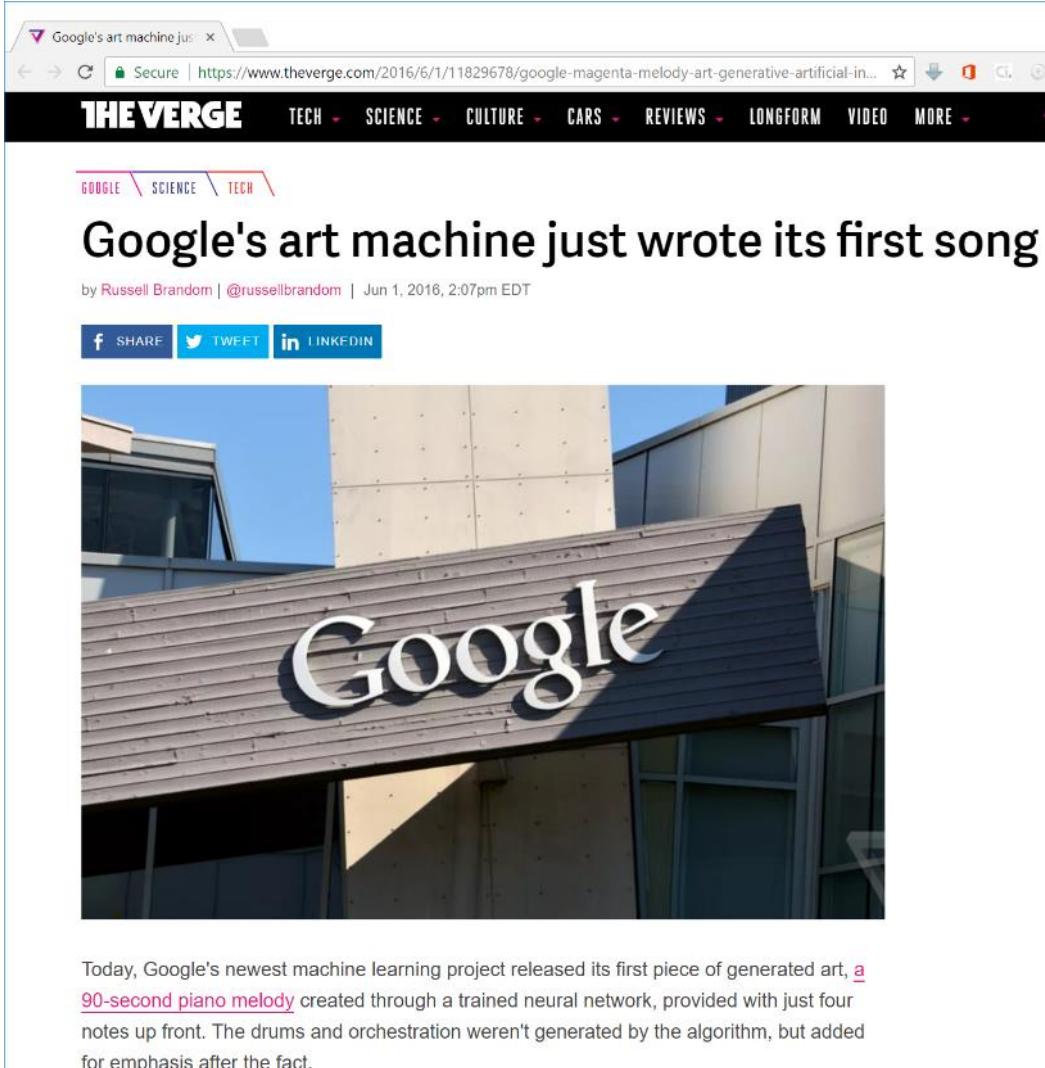
Well, kinda-sorta. The announcement details a new initiative in which artificial intelligence (AI) technology is being used to determine workflows and employee duties in real time. Specifically, an AI "boss" was put in charge of a warehouse management system, where it managed to effect an 8 percent increase 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' from The Verge. The page includes the The Verge logo and navigation links for TECH, SCIENCE, CULTURE, CARS, REVIEWS, LONGFORM, VIDEO, and MORE. 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.

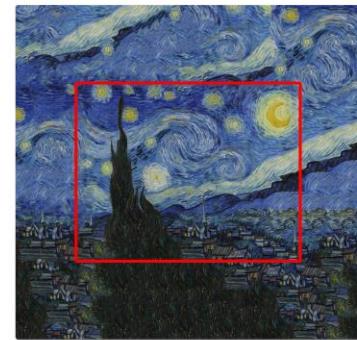
A story is often told about Pablo Picasso charging an enormous sum for a portrait. The

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 ▾

Sign in 

UK Edition ▾ | Search 

◀ | TV & SHOWBIZ | NEWS | LIVING | MONEY | MOTORS | TRAVEL | TECH | SUN SAVERS | SUN BETS | SUN BINGO

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

Male

Female

Composite heterosexual faces

Composite gay faces

Average facial landmarks

gay

straight

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](#)

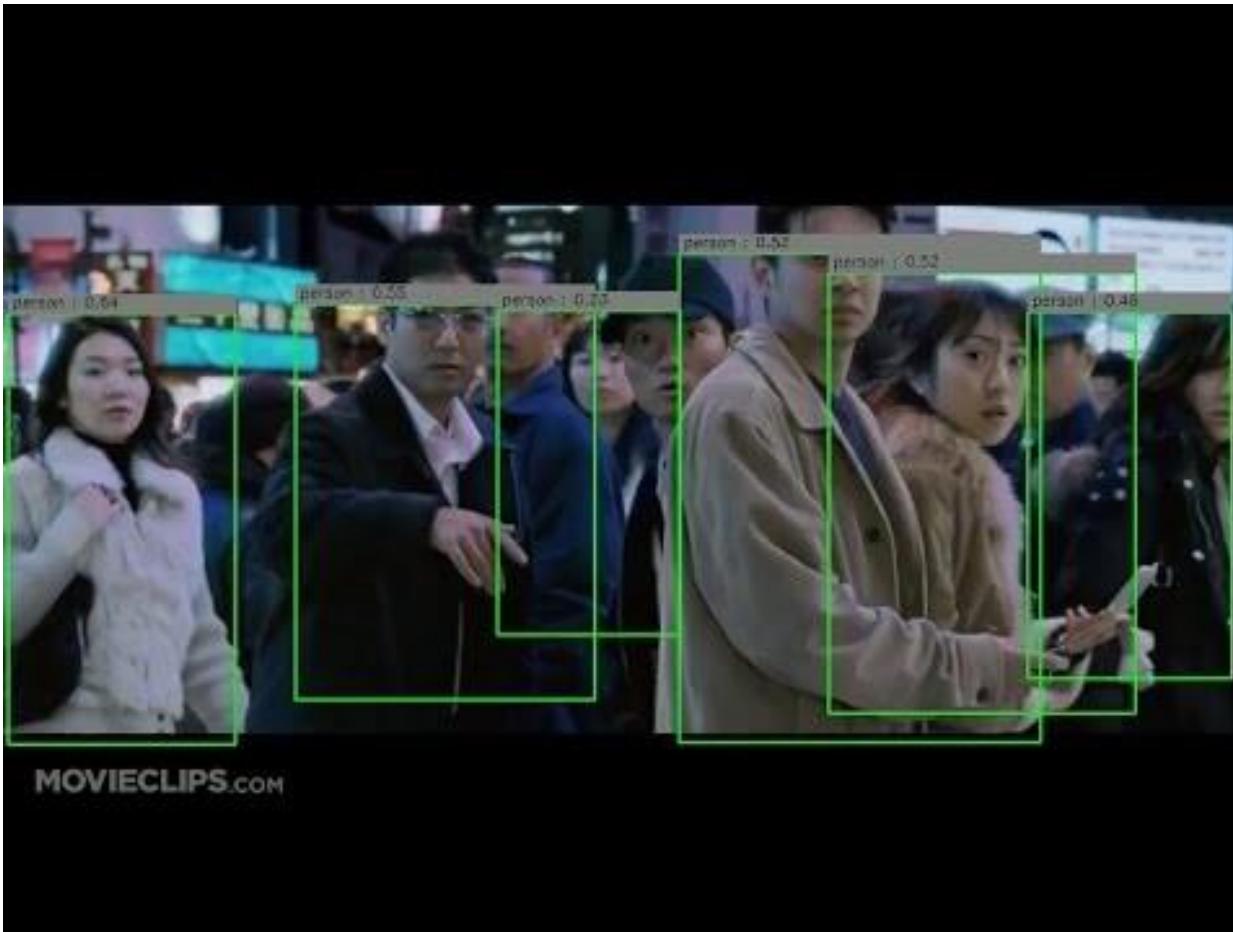
Russian weapons maker Kalashnikov is working on an automated gun system that uses artificial intelligence to make "shoot/no shoot" decisions. But exactly how this AI or any other decides who is a combatant and who isn't is at the heart of a raging debate over allowing autonomous weapons on battlefields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

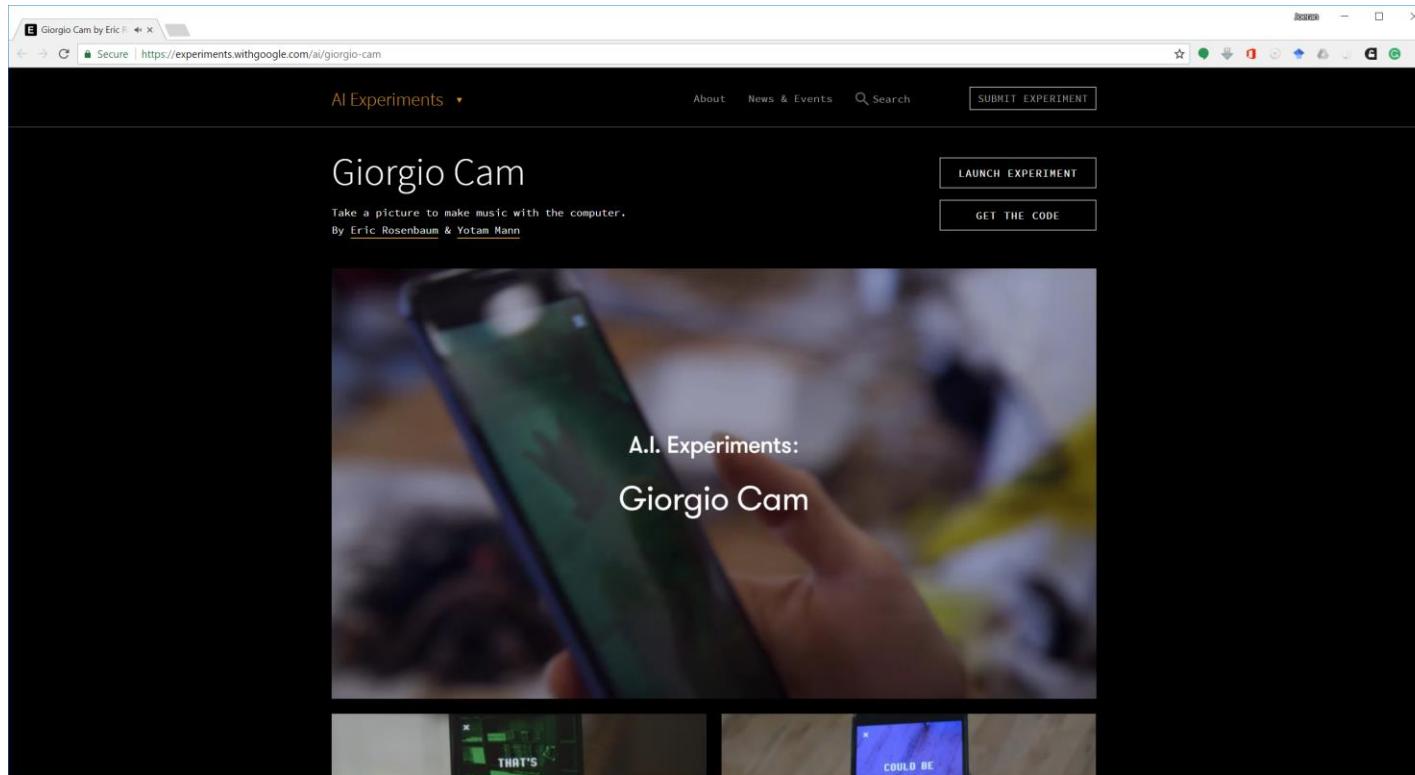
Object Recognition

<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**

Lab Sessions only take place when explicitly announced (keep all dates free in your calendar though). Keep in mind, there are different times (and rooms?) for CS7CS4 and CS4404.
- **Assessment**
 - Exam, 2 or 3 hours (60% of the final grade)
 - Course Work (40% of the final grade)
 - Supplemental Exam, 2 or 3 hours (100%)



Schedule

Subject to changes

Latest Version:

<https://www.dropbox.com/s/zcfrxp1ssw6i12j/lecture%20schedule%20and%20deadlines%2C%20ML1920%20TCD.xlsx?dl=0>

Excel Sheet for Ind. Comp. Source Code

URL Submission:

<https://1drv.ms/x/s!AtfAgPR4VDcEr6sZR2ARxRgdfSoEHg?e=PNLyD9>

This Excel Sheet is visible to all students of the module.

	Lecture	Lecturer	Lab Session?	Assignment Name	Due Dates (All Times are Irish Time Zone if not stated otherwise)
Week 01	Introduction to ML & The Module	Joeran Beel	No		
Week 02	Linear Regression	Douglas Leith	???		
Week 03	ML Pipeline	Joeran Beel	???		
Week 04	Classification & Guest Lecture (2nd Oct.)	Douglas Leith & Joeran Beel	???		Attendance for the Guest Lecture is mandatory.
Week 05	ML Evaluation	Joeran Beel	???		
Week 06	SVM & Kernel Methods	Douglas Leith	???	Individual Competition	15 Oct. 23:59 UTC , Submit Indiv. Comp. on Kaggle https://www.kaggle.com/t/515c3a6044e745ea85567d93cfb57a66 16 Oct. 23:59, Submit Source Code on GitHub (see Kaggle for Details) and Add Details in Excel Sheet https://1drv.ms/x/s!AtfAgPR4VDcEr6sZR2ARxRgdfSoEHg?e=a2AhkP
Week 07	Study Week		No		
Week 08	Unsupervised Learning	Douglas Leith	???		
Week 09	Probabilistic Interpretation & Recommender Systems	Douglas Leith	???		
Week 10	Neural Networks	Joeran Beel	???		
Week 11	Deep Learning	Joeran Beel	???		
Week 12	Misc (TBA) & Recap	Joeran Beel	???	Group Competition	26. November, Submit Group Competition on Kaggle. URL TBA 27. November, Submit Source Code on GitHub. Details TBA.

Course/Assignments

- **Individual Programming Assignments (10%)**
 - Linear Regression
 - Logistic Regression
 - Support Vector Machines
 - Unsupervised Machine Learning
- **Individual Competition (10%)**
 - See
 - <https://www.kaggle.com/t/515c3a6044e745ea85567d93cfb57a66>
- **Group Competition (20%)**
 - Details TBA
 - Group Building
 - ~ 3 Students
 - Groups are build based on performance in individual competition (students of similar performance build one group; though some randomness is involved).

Exam

- **Probably a mix of**
 - Multiple choice
 - Open-answer questions
 - Potentially Calculations/programming (on paper)

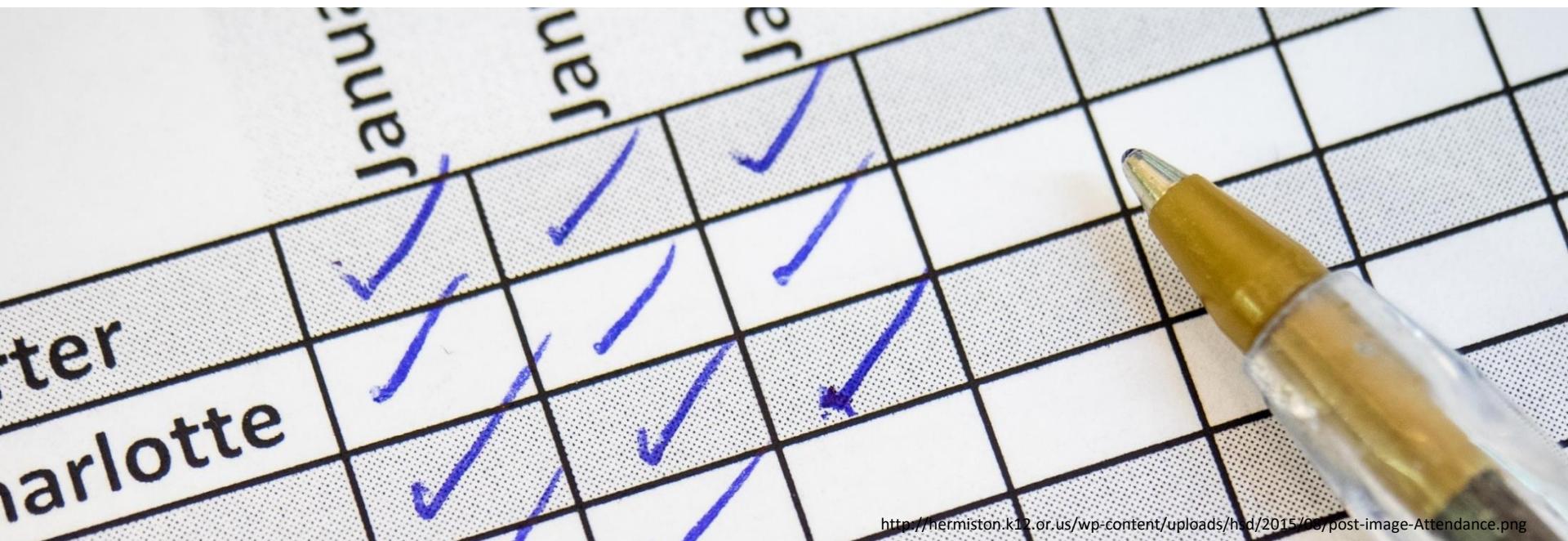


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Expectations & Rules

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>

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 3 working days
- **For sensitive/private matters: Email**
 - Always to both joeran.beel@scss.tcd.ie & doug.leith@scss.tcd.ie
 - Email subject
 - Use “[ML1920]” as prefix (e.g. “[ML1920] Cannot attend guest lecture”).
 - Meaningful subjects (“~~[ML1920]~~ appointment” vs. “[ML1920] 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. At the top, there's a header with the Trinity College Dublin logo, the text "Trinity College Dublin", "Coláiste na Tríonóide, Baile Átha Cliath", "The University of Dublin", and the "Blackboard learn+" logo. To the right of the header are links for "My Learning Space", "Student Help", and "Staff Help". There's also a user icon for "JOERAN BEEL" and a power button icon. Below the header, the main content area has a breadcrumb navigation bar with icons for "Home", "Discussion Boards", and "CS4404-A-Y-201718 (MACHINE LEARNING)". The main title is "Discussion Boards". On the left, there's a sidebar with "MODULE MANAGEMENT" and a "Control Panel" section containing links for "Files", "Module Tools", "Evaluation", "Grade Centre", "Users and Groups", and "Customisation". The main content area contains two sections: "Student Forum" and "Questions to the Lecturers". The "Student Forum" section has a sub-section for "Machine Learning". The "Questions to the Lecturers" section contains text about sending emails to lecturers.

(Negative) Example

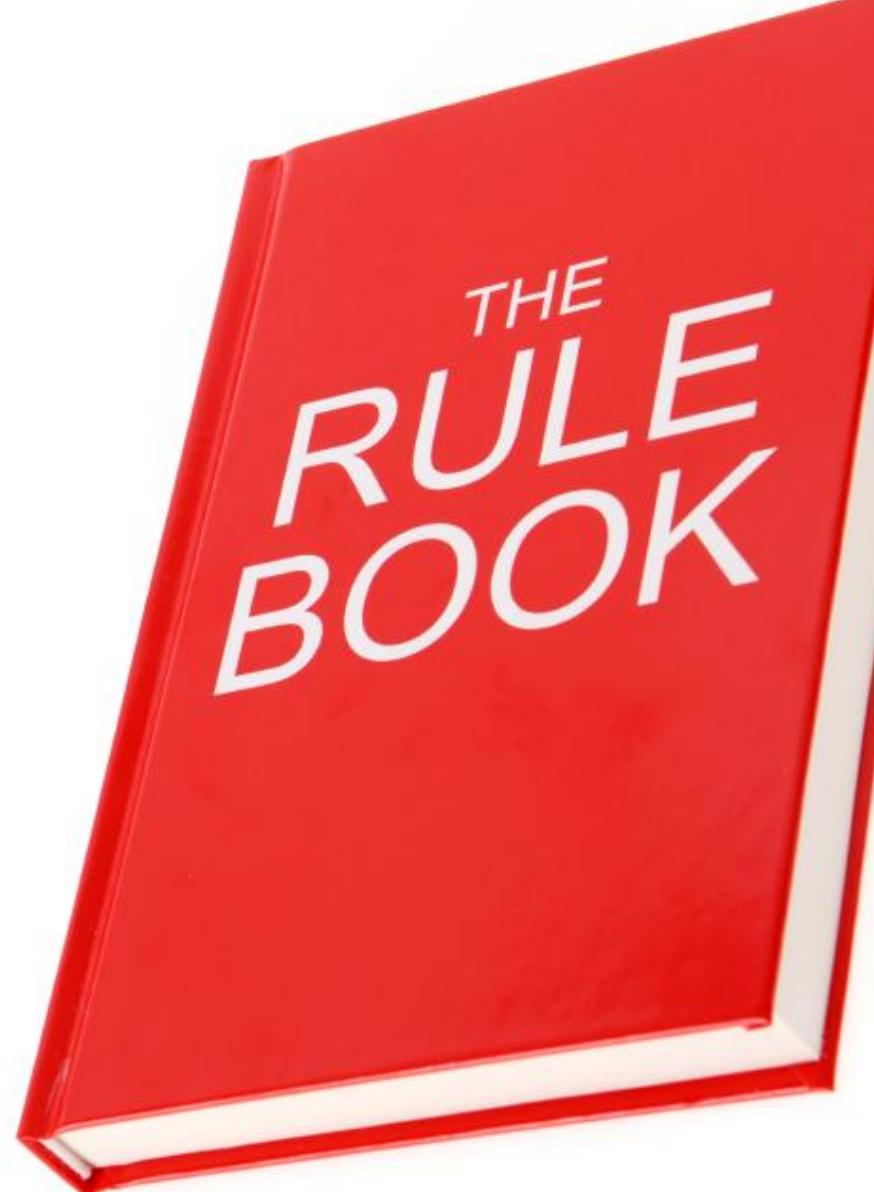
The screenshot shows a Google Mail inbox search results page. The search query is "dissertation" OR "final year project". The results are listed in a table with columns for subject, preview, and date.

Subject	Preview	Date
Inbox	Final Year Project -	12:39 pm
	Dissertation Project Proposal -	8:38 am
	Dissertation - Projects inquiry -	Oct 2
	Requesting an appointment for dissertation -	Oct 2
	M.Sc. Dissertation	Oct 2
	Query about a potential Final Year Project	Oct 2
	Requesting an appointment for dissertation	Sep 29
	ML Dissertation Supervision	Sep 29
	Final Year Project	Sep 29
	Your Final Year Project Offers -	Sep 28
	Final Year Project -	Sep 27
	Master Project	Sep 26
	Dissertation choice -	Sep 26
	I'm interested in your Final Year Project options -	Sep 26
	Final Year Project Supervisor and project proposal -	Sep 26

A red box highlights the first ten results, which are all related to Joeran's inquiries about final year projects. The results are numbered 1-100 of many.

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 second late is too late. Only exception: serious illness (medical certificate required).**
- If you submit a deliverable late that is marked (e.g. assignment), you will receive 0 marks for that deliverable
- If you submit a deliverable late that is not marked (e.g. source code), you will be deducted 3 marks off your overall course work marks, i.e. e.g. 60 instead of 63 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 ;-)



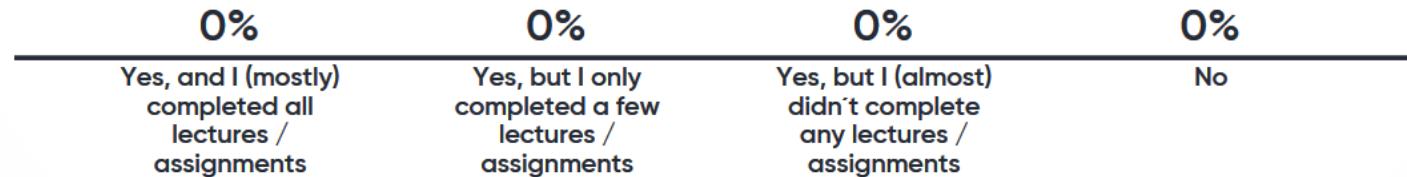
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The University of Dublin

You

Go to www.menti.com and use the code 88 06 38

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

 Mentimeter



Slide is not active

Activate

 0

Last Year

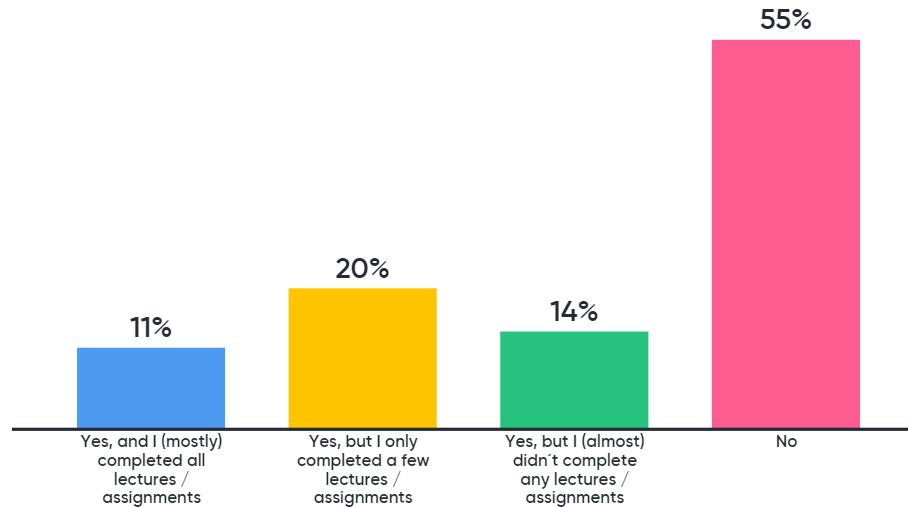
01 -1 (Intro to the Module) - Menti

mentimeter.com/s/73a436d6c6a04a296ef9d4558fc8c8f6/66f602cf4667

Go to www.menti.com and use the code **78 43 77**

Mentimeter

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



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Knowledge/Skills in ...

Poor

Excellent

Machine Learning

Statistics

Software Engineering

Databases

Writing (documentation, research papers, ...)



Slide is not active

Activate



Last Year

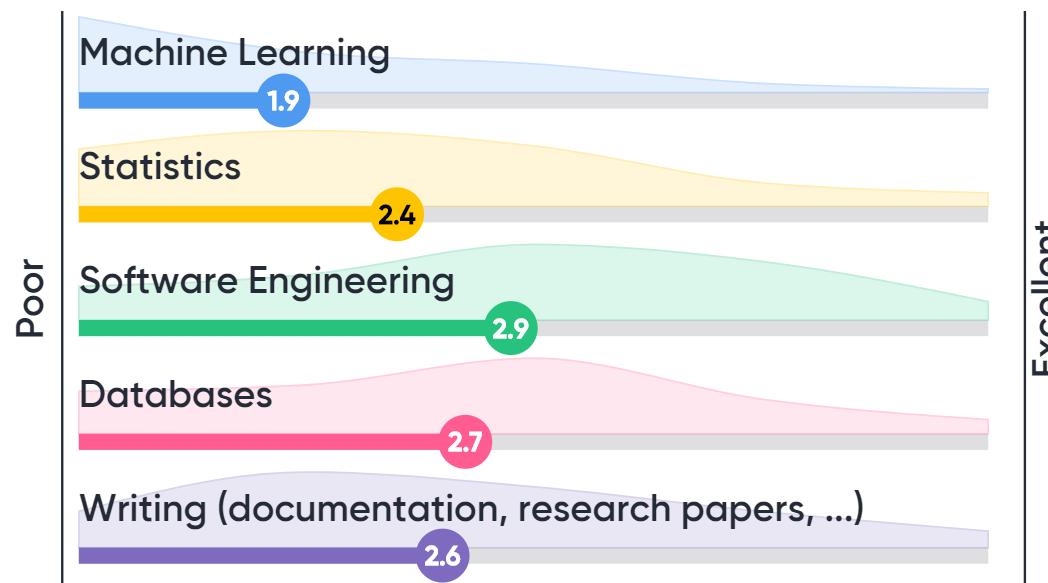
01 -1 (Intro to the Module) - Menti

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Knowledge/Skills in ...

Mentimeter



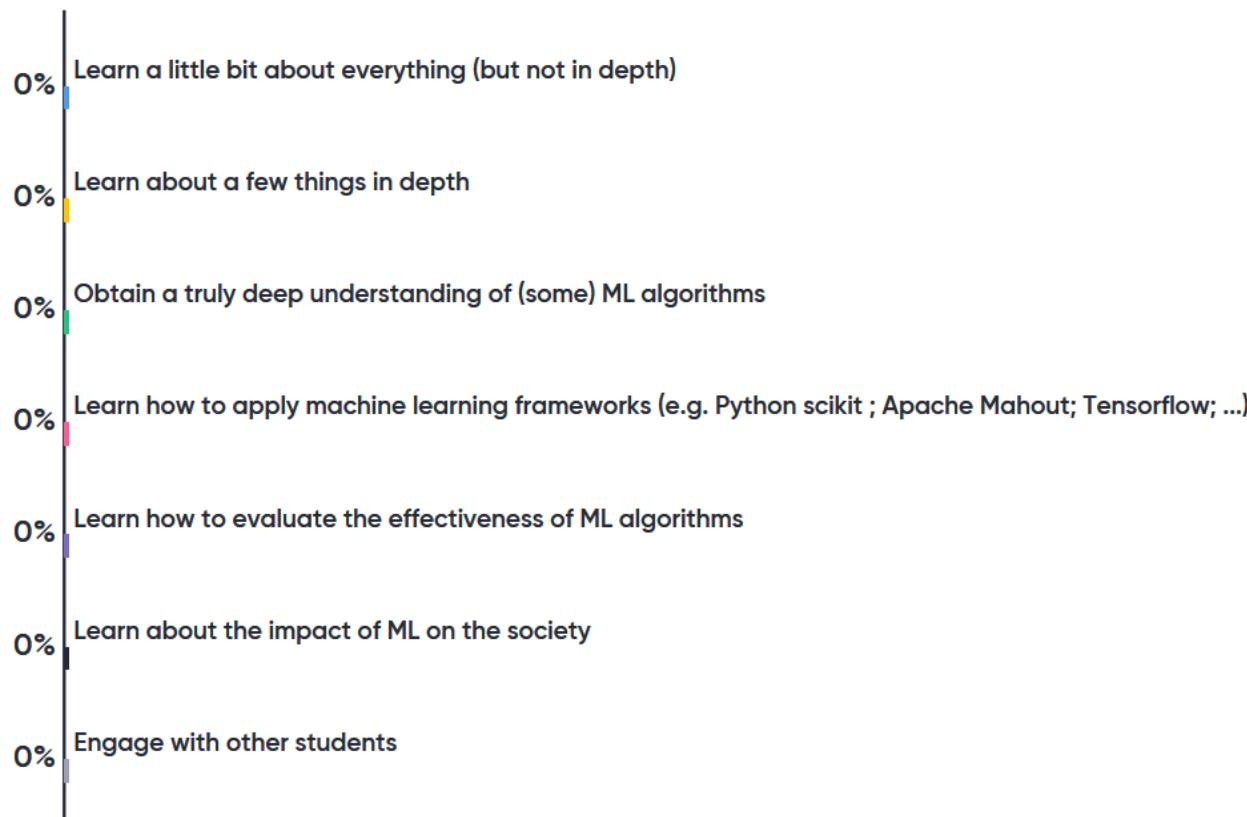
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Mentimeter

What are your expectations for the module?



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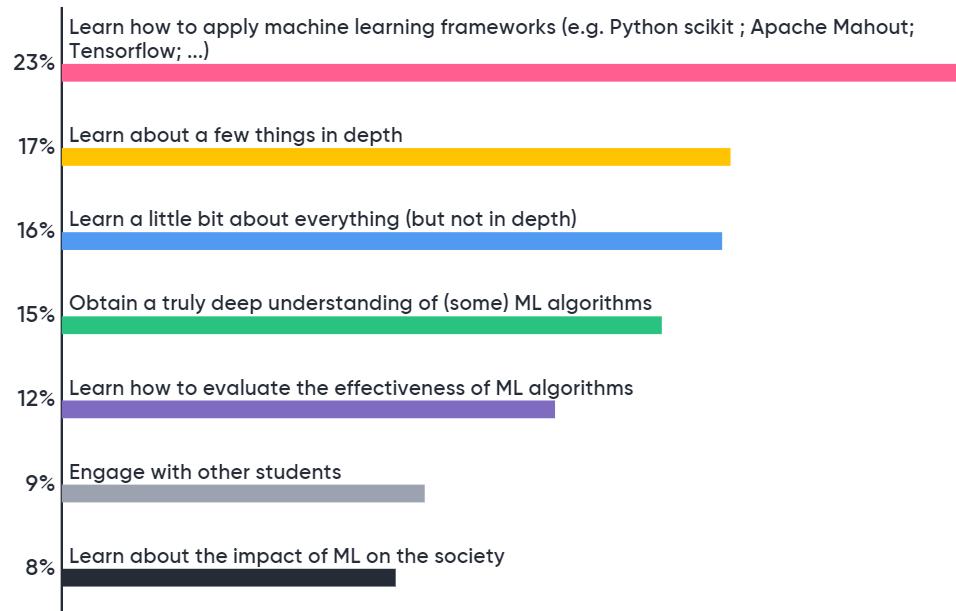
01 -1 (Intro to the Module) - Menti

mentimeter.com/s/73a436d6c6a04a296ef9d4558fc8c8f6/ad7ec492be88

Go to www.menti.com and use the code **78 43 77**



What are your expectations for the module?



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Go to www.menti.com and use the code 88 06 38

Knowledge in Programming Languages

Mentimeter



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Last Year

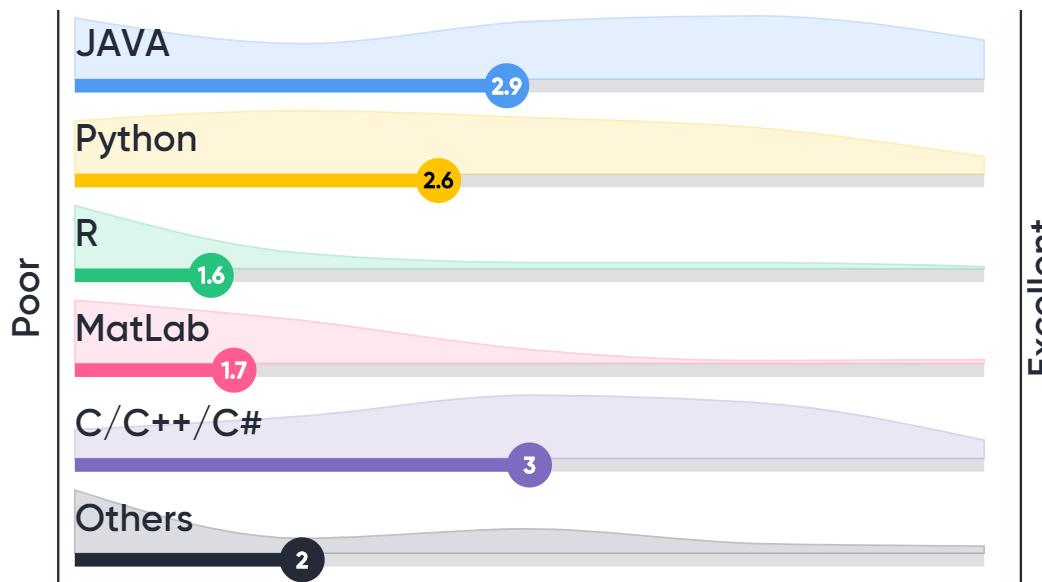
01 -1 (Intro to the Module) - Menti

mentimeter.com/s/73a436d6c6a04a296ef9d4558fc8c8f6/764249533fd5

Go to www.menti.com and use the code **78 43 77**



Knowledge in Programming Languages



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Go to Settings to activate Windows



Go to www.menti.com and use the code 88 06 38

What careers are attractive to you?

 Mentimeter

0%	0%	0%	0%	0%	0%	0%	0%	0%
Machine Learning Engineer	Data Scientist	Software Engineer	Researcher	Project or Product Manager	Business Manager	Consultant	Start-up founder	Other

Last Year

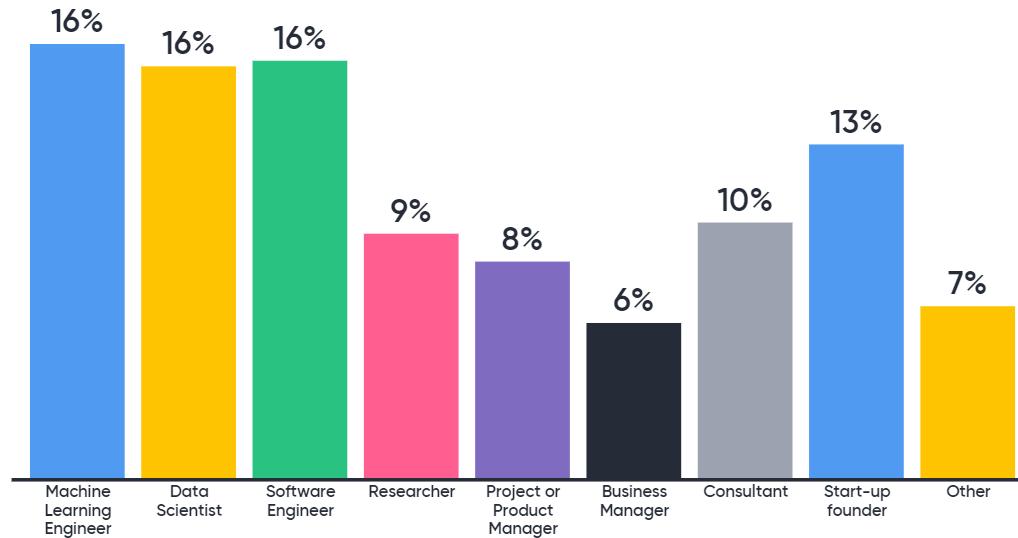
01 -1 (Intro to the Module) - Menti

mentimeter.com/s/73a436d6c6a04a296ef9d4558fc8c8f6/68b81ab01979

Go to www.menti.com and use the code **78 43 77**

Mentimeter

What careers are attractive to you?

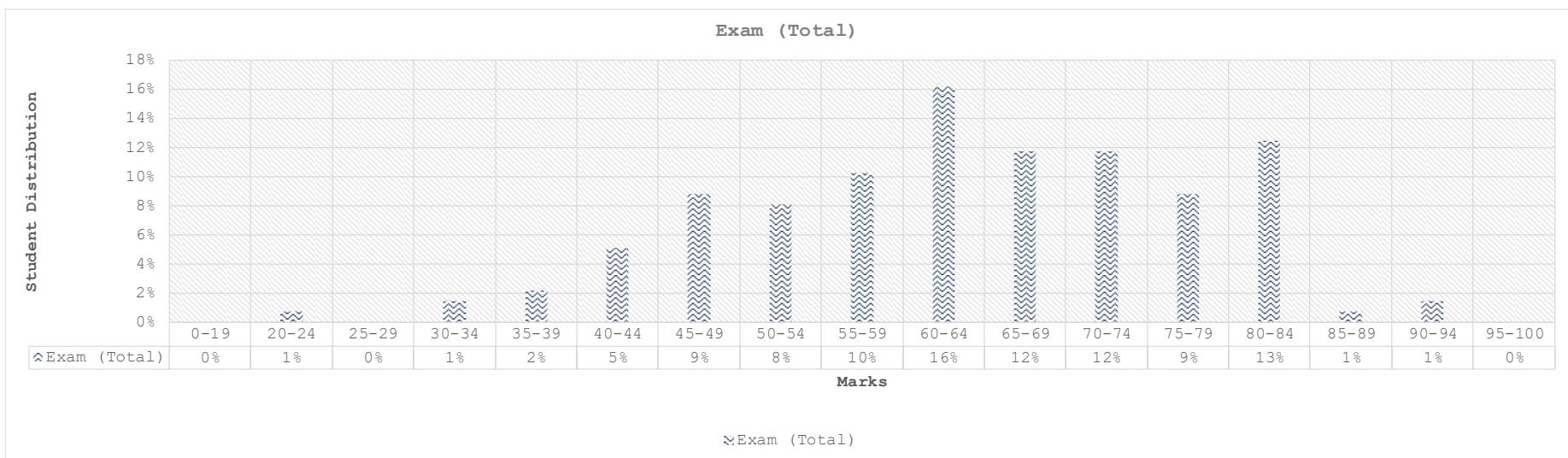
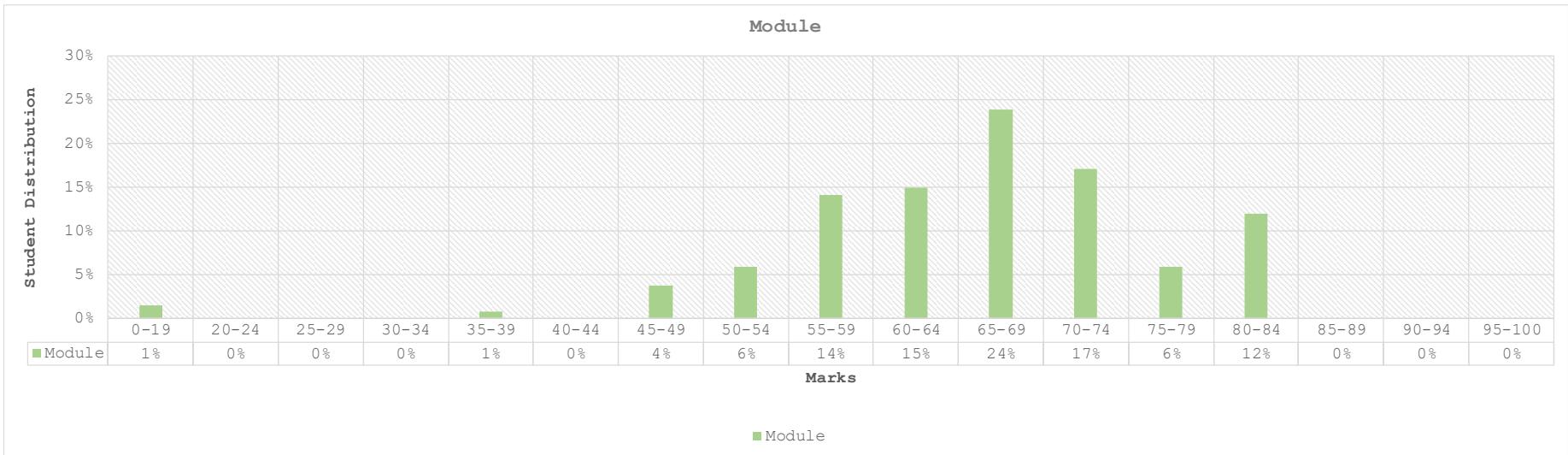


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 135

Literature Recommendations

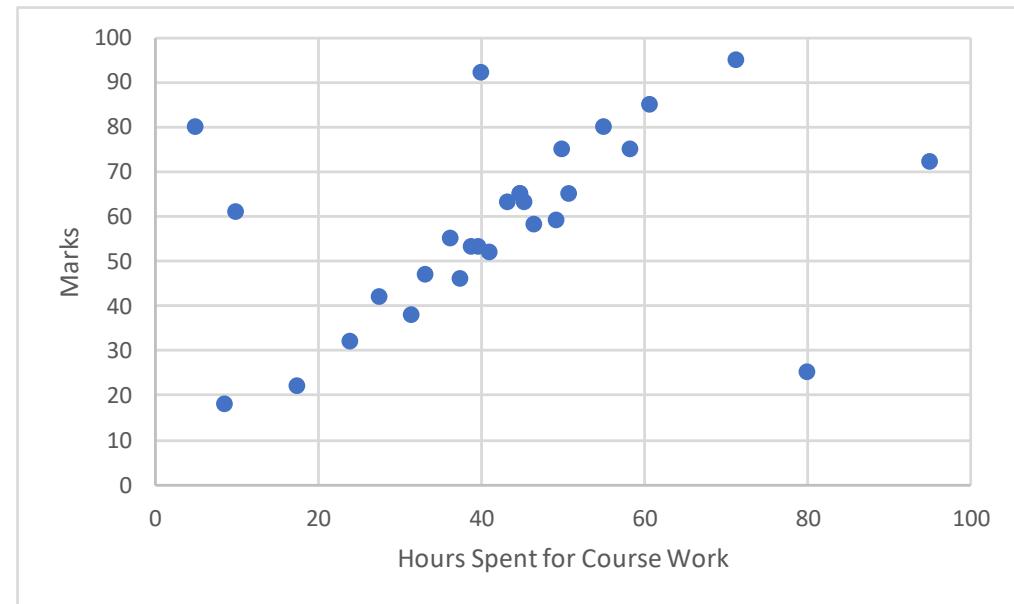
- Books
 - Aurélien Géron, ***Hands on Machine Learning with scikit-learn and Tensorflow*** (O'Reilly Media, 2017)
 - Henrik Brink, Joseph Richards, and Mark Fetherolf, ***Real-world machine learning*** (Manning Publications Co., 2016)
 - John Paul Mueller and Luca Massaron, ***Machine Learning for Dummies*** (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