Machine Learning and Artificial Intelligence (with Sports)

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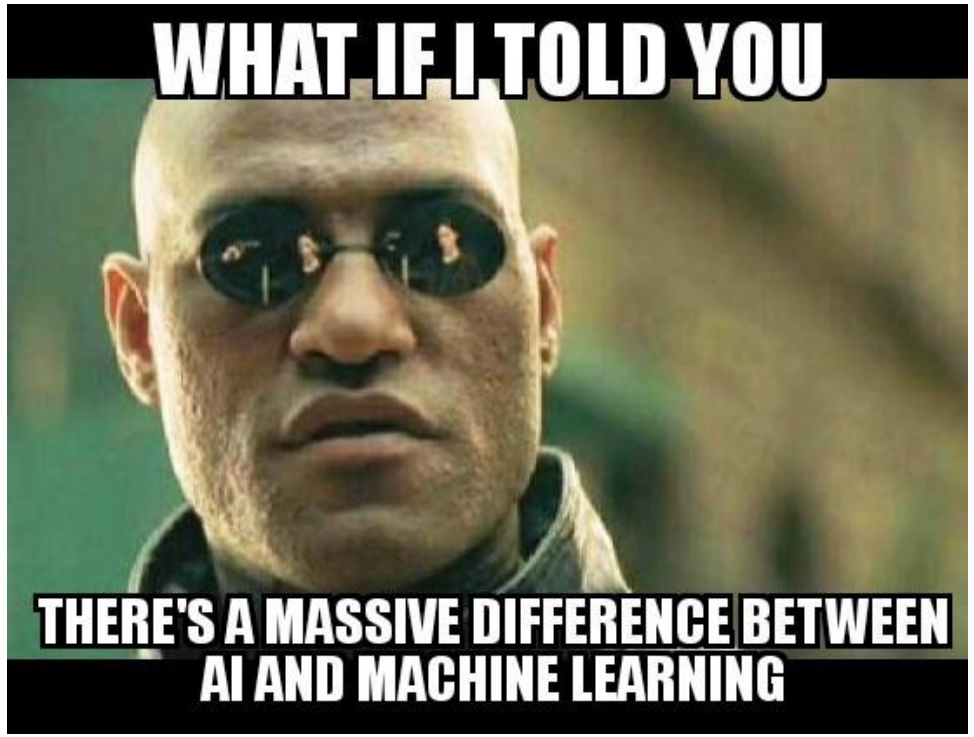
Computer Science and Math Department



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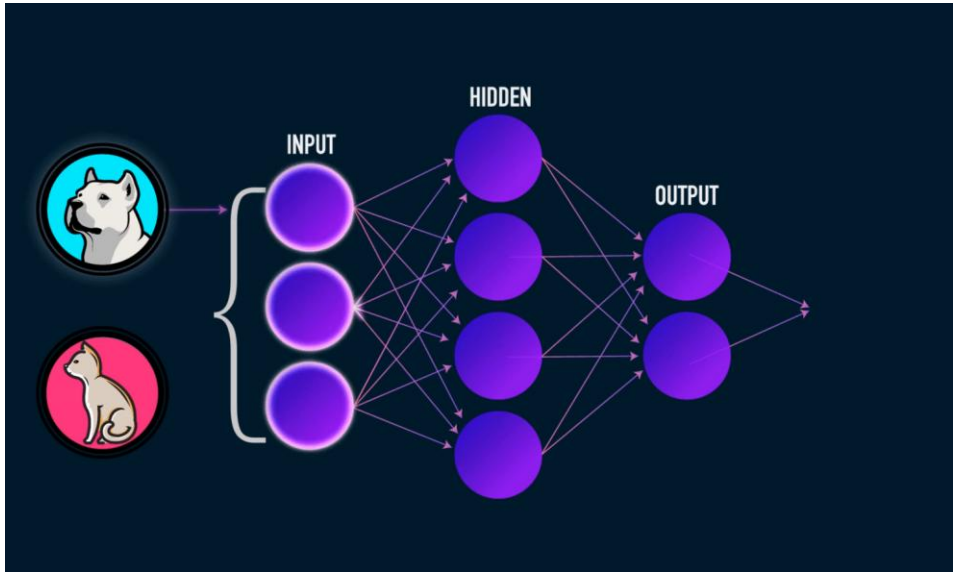
Machine Learning (ML): Knowledge

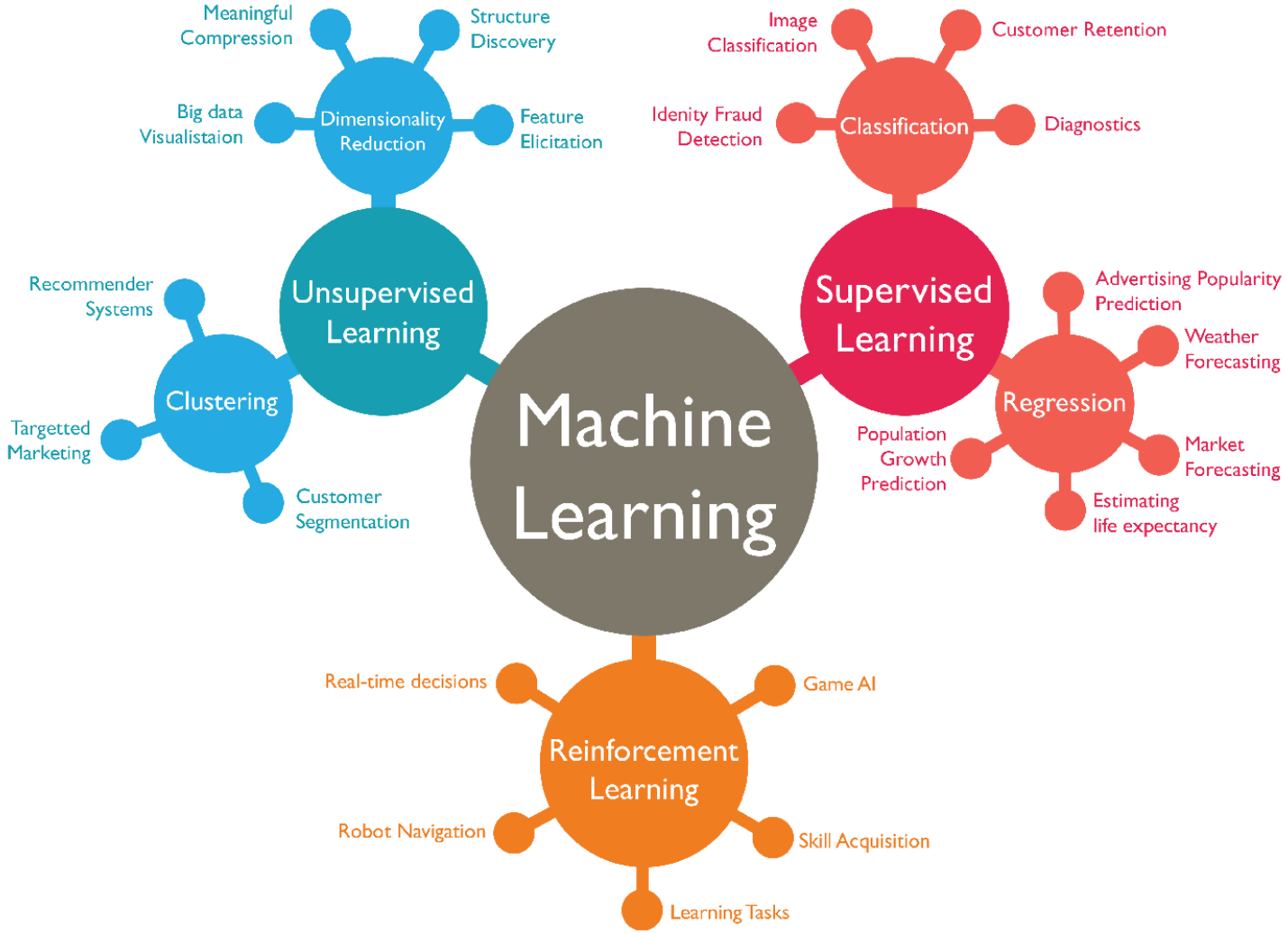
- Automate analytical model building
- Find hidden insights in data
  - Learn from historical data
  - Identify patterns
  - Maximize performance
- Auto-learn and improve from experience
- Acquire
  - Knowledge
  - Skills



https://miro.medium.com/max/3000/1*bhFifratH9DjKqMBTeQG5A.gif

ML Types

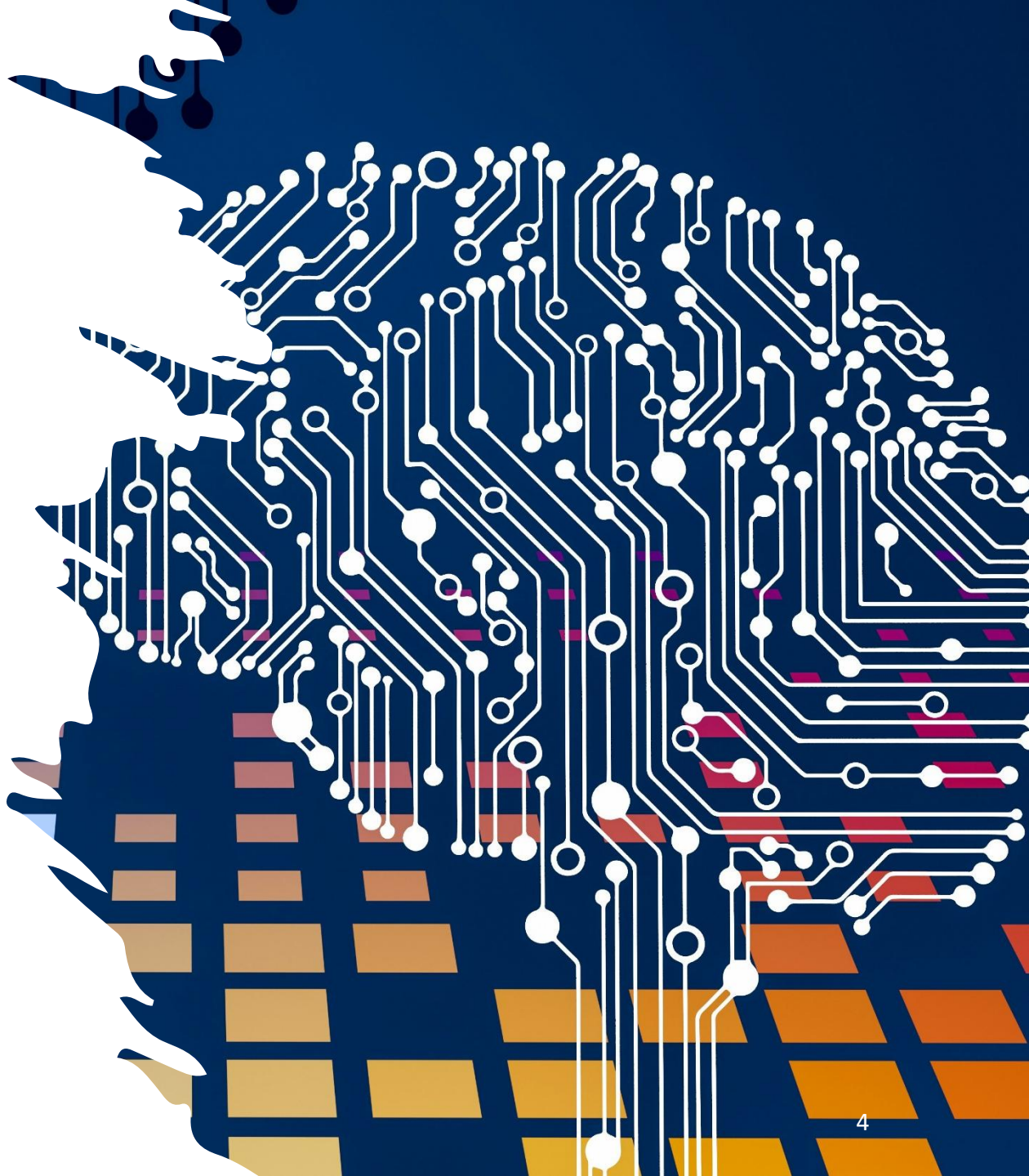
- Supervised -> Labels -> Task Driven
- Unsupervised -> No labels -> Data Driven
- Reinforcement Learning -> Maximize Reward -> Learn from Mistakes



https://towardsdatascience.com/machine-learning-types-2-c1291d4f04b1

Artificial Intelligence (AI): Intelligence

- Mimic human reasoning (cognitive learning)
  - Thinking
  - Learning
  - Remembering
  - Find an optimal solution
- Mimic human abilities
  - Image/audio/video/text recognition and speech
  - Robotics

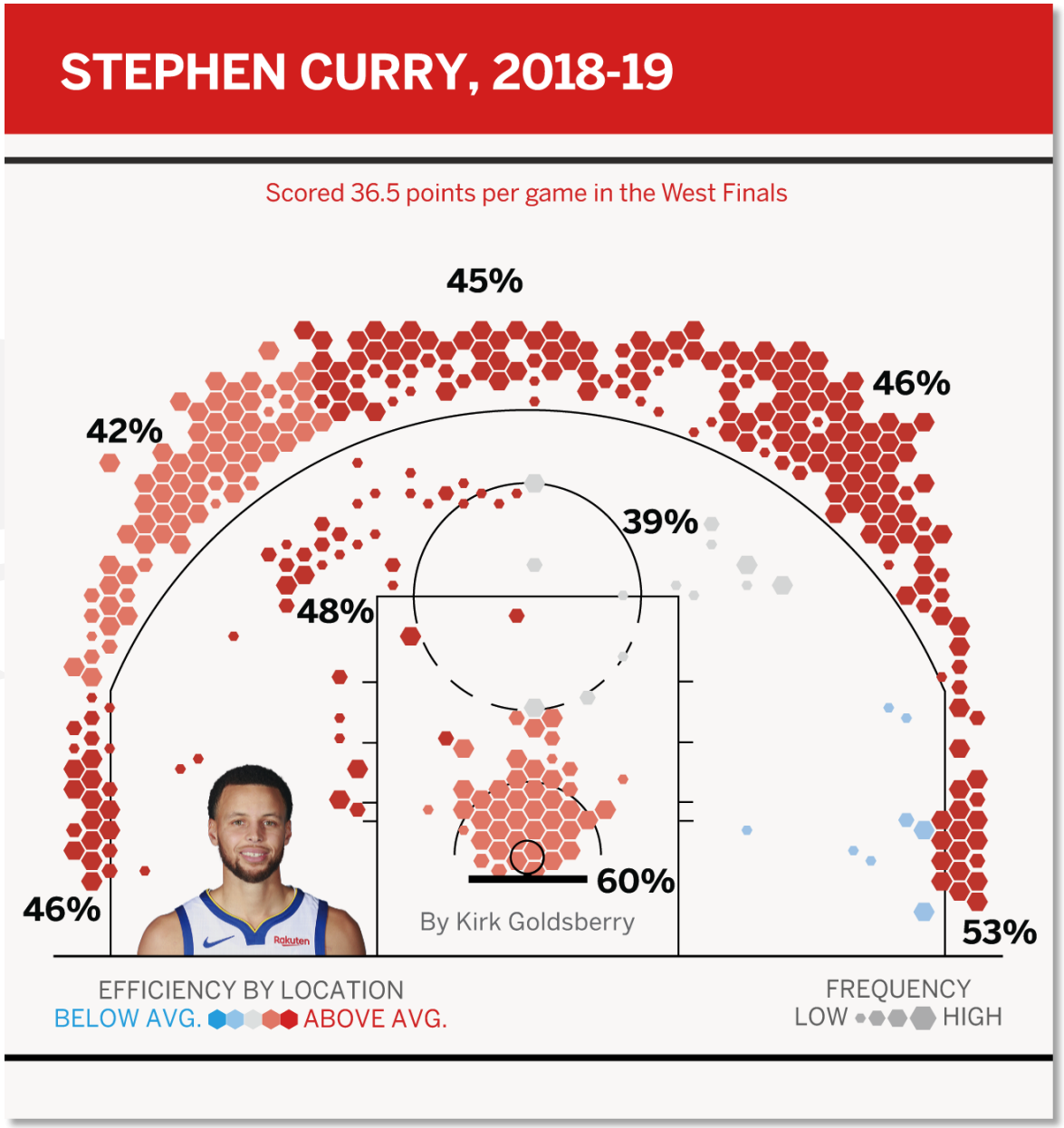


NBA Data Science 1

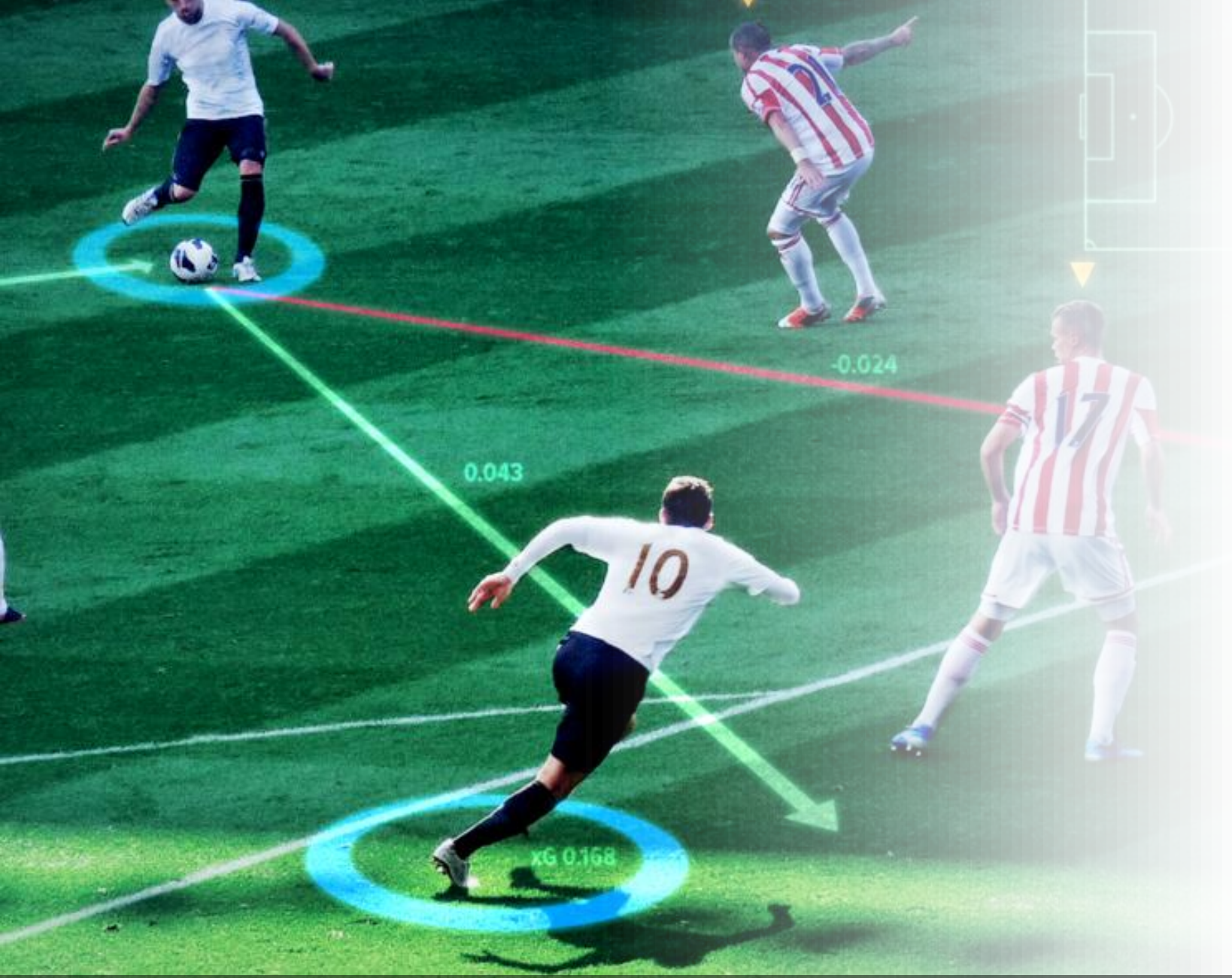
https://youtu.be/MpLHMKTolVw?t=158

NBA Data Science 2

https://youtu.be/oUvvfHkXyOA?t=242



https://www.paxata.com/blog/parsing-big-data-json-for-nba-analytics-and-data-science/



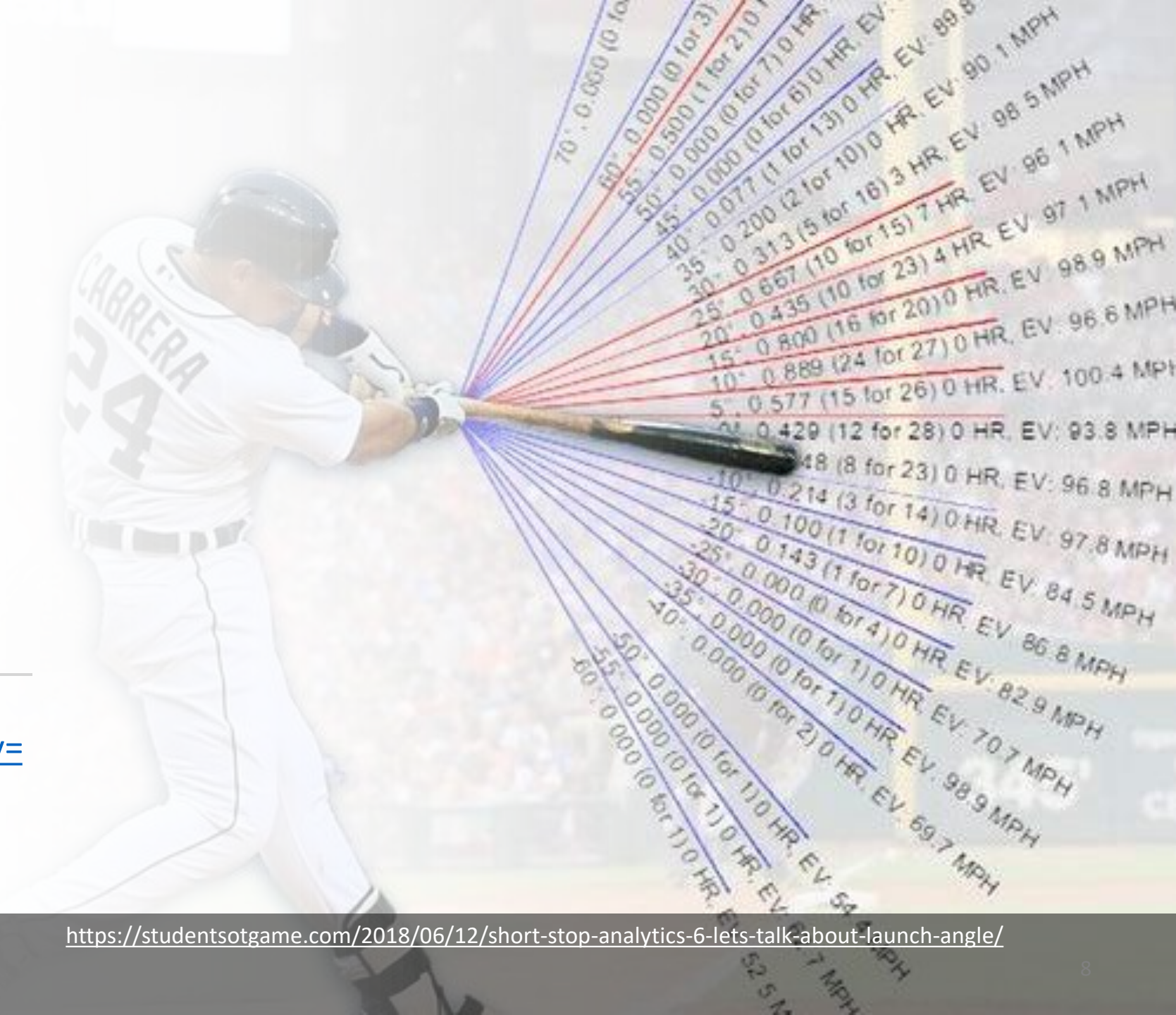
https://www.scisports.com/valuing-football-players-passes-by-leveraging-event-sequences/

Soccer Data Science

https://youtu.be/A3JQCsM2qfA?t=66

Moneyball

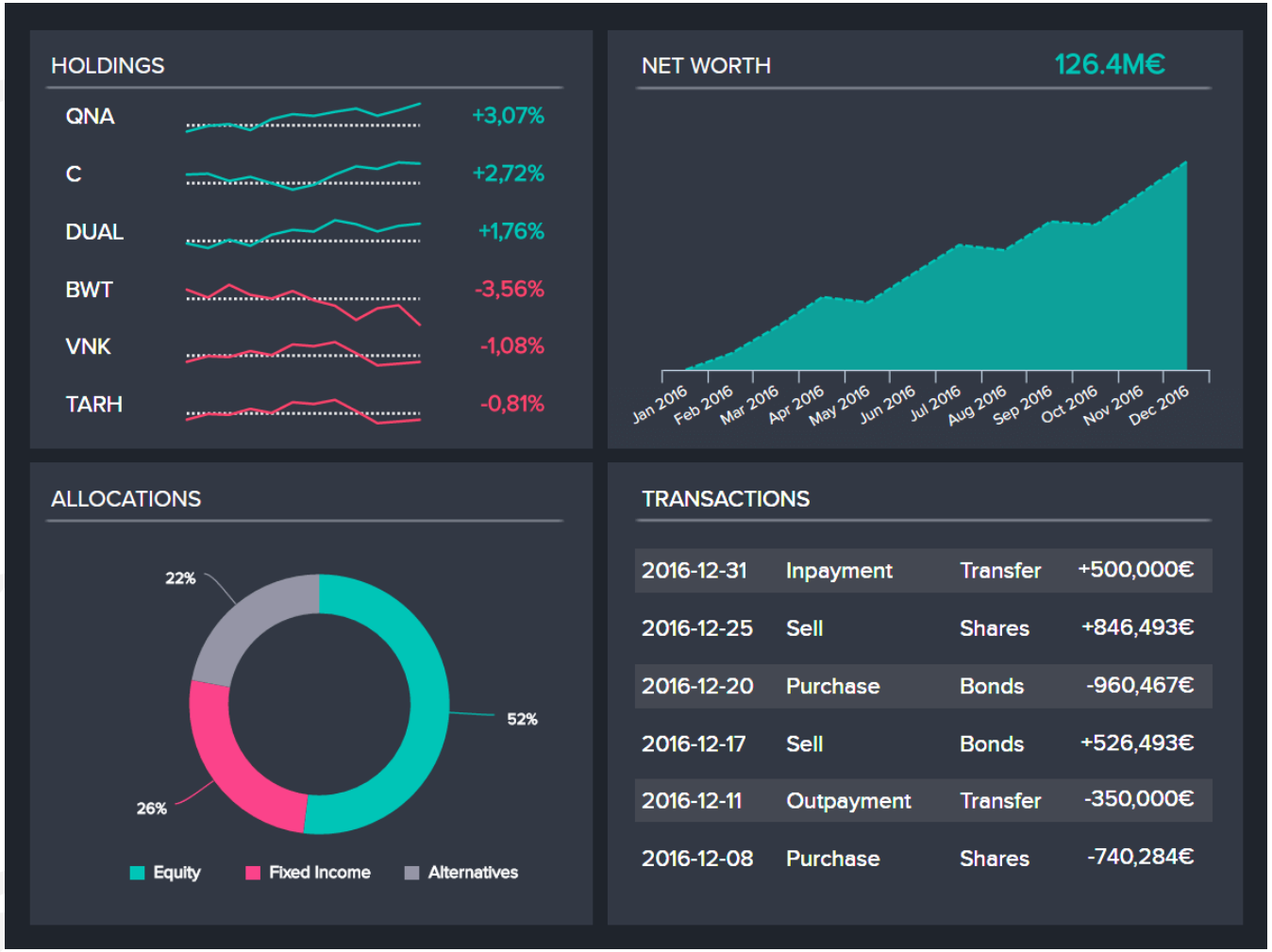
https://www.youtube.com/watch?v=AiAHlZVgXjk



https://studentsotgame.com/2018/06/12/short-stop-analytics-6-lets-talk-about-launch-angle/

AI in Accounting

https://www.youtube.com/watch?v=v-7iZEsPWZ4



https://www.datapine.com/finance-analytics

AlphaZero and AlphaGo

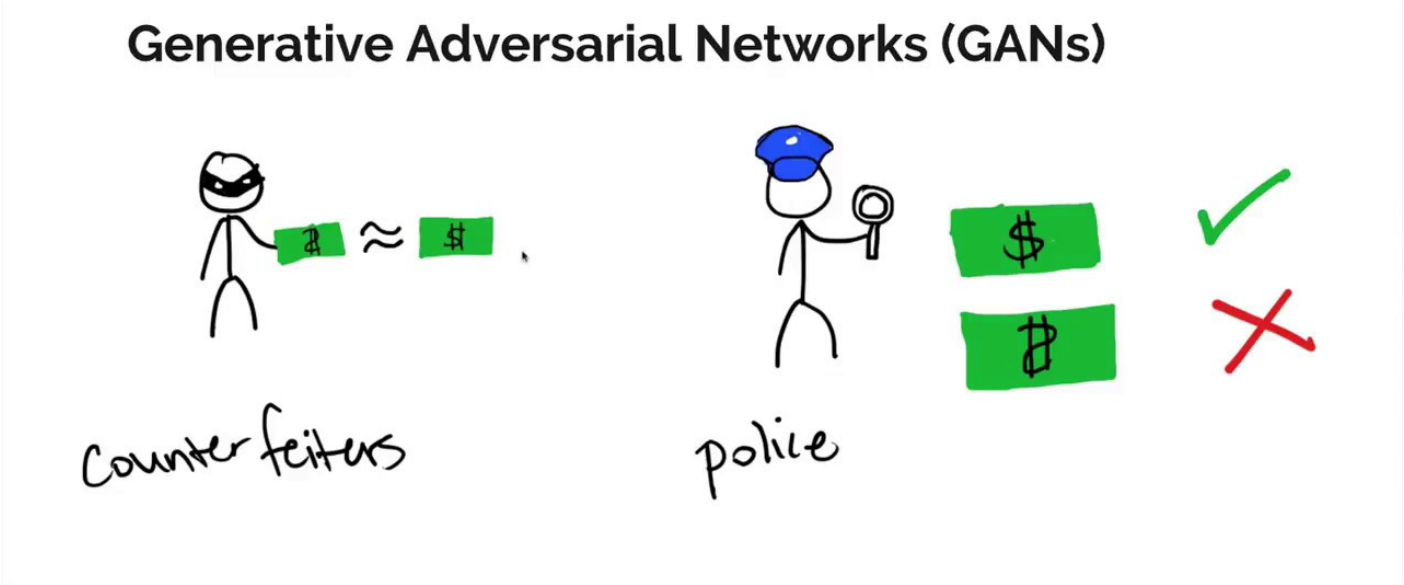
https://www.youtube.com/watch?v=7L2sUGcOgh0

https://deepmind.com/blog/article/alphazero-shedding-new-light-grand-games-chess-shogi-and-go

DeepMind

https://www.deepmind.com/

https://www.youtube.com/watch?v=ZRgwcMqxhPw



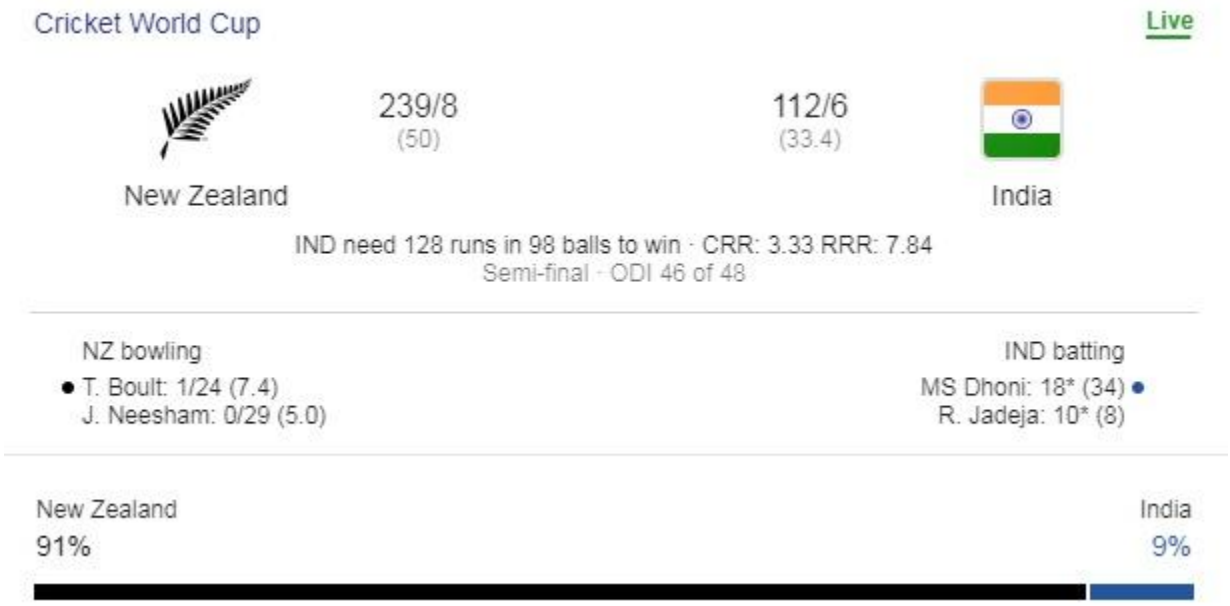
Generative Adversarial Networks

https://thispersondoesnotexist.com/
https://youtu.be/kSLJriaOumA?t=28
https://medium.com/@jonathan_hui/gan-some-cool-applications-of-gans-4c9ecca35900
https://www.youtube.com/watch?v=e0yEOw6Zews

Meme Generator

https://www.vice.com/en_us/article/gyk3dq/stanford-researchers-trained-a-neural-network-to-make-these-memes

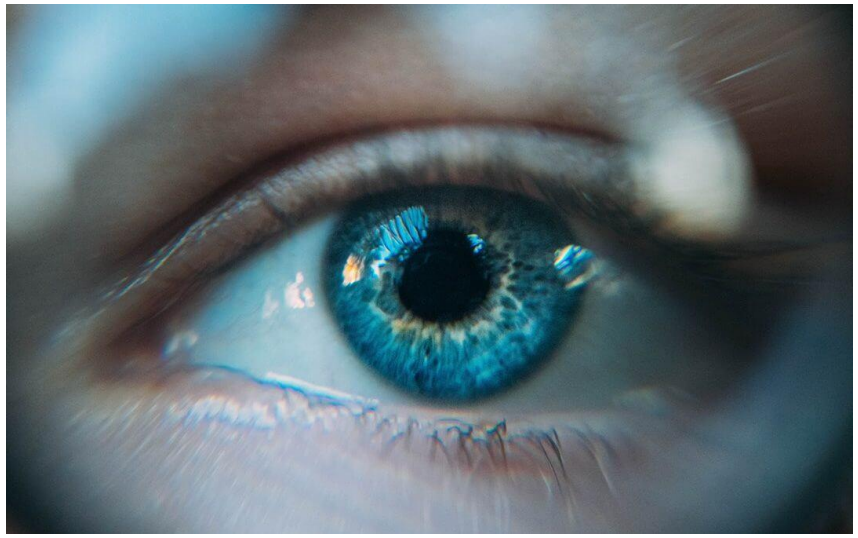
https://www.jagranjosh.com/current-affairs/india-vs-new-zealand-semi-final-live-upates-ind-vs-nz-live-score-world-cup-2019-match-winner-result-1562663968-1



Google Predicts Match Outcome

See live scores when a game starts: shows you “win probability”

https://kyeye.com/near-or-far-what-does-20-40-vision-mean/



Vision/Text/Speech

https://cloud.google.com/vision/

Robotics (run/parkour/jump/move)

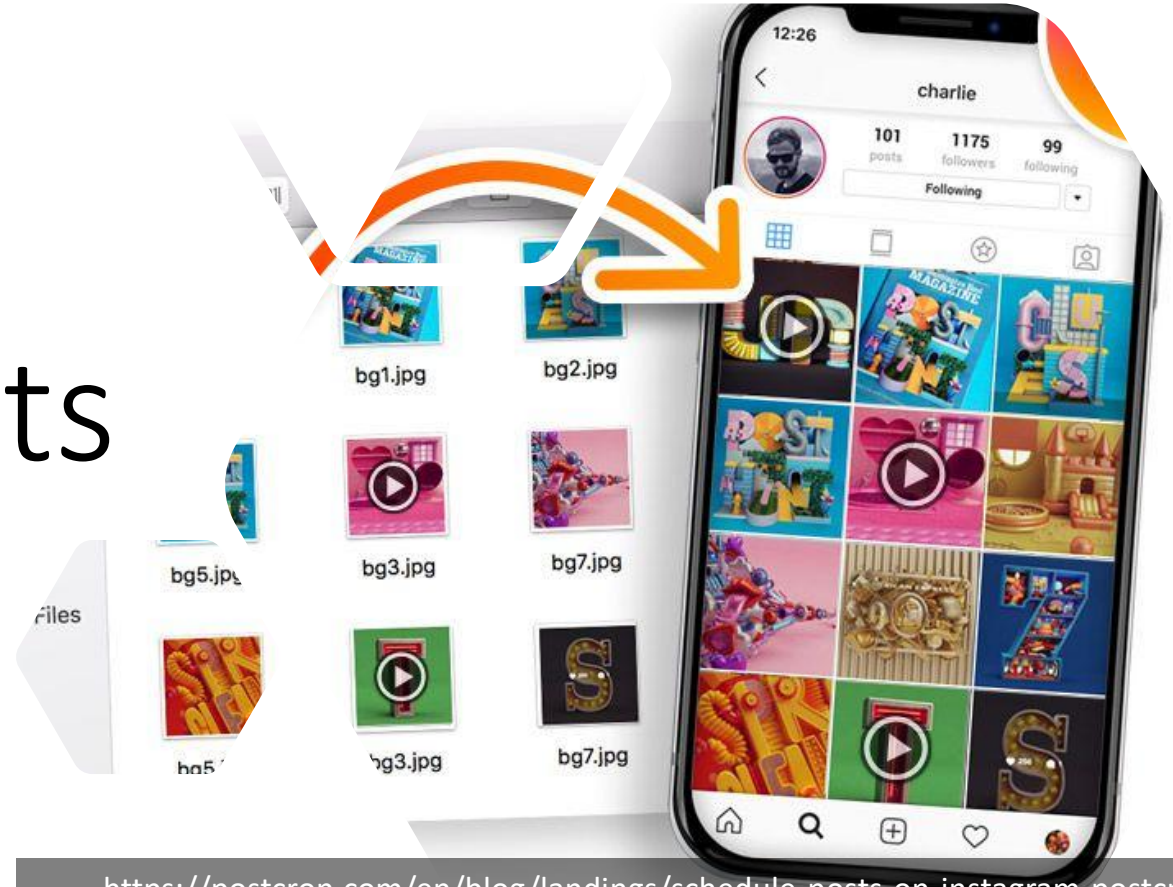
https://www.youtube.com/watch?v=kHBcVlqpvZ8

https://www.youtube.com/watch?v=aFuA50H9uek

Superball Boston Dynamics explained:
https://www.youtube.com/watch?v=Jq0GknnKvXM

Automating Instagram Posts

https://www.linkedin.com/pulse/how-i-am-earning-500-followers-weekly-instagram-using-fernandes/



https://postcron.com/en/blog/landings/schedule-posts-on-instagram-postcron/

GPT-3-powered Business Ideas Generator

https://ideasai.net/

https://smallbusinessforum.co/6-things-to-consider-when-starting-a-small-business-without-initial-investment-a8ccb8ad6aaf

Gradio

https://gradio.app/

Smart Checkout

Train your app to recognize different types of produce to help checkout faster without the need to remember price look-up codes.

Lobe (AutoML) – Train Your App

https://lobe.ai/

Trends

- Google Trends (https://trends.google.com)
- Self-driving Cars
- Speech Emulation
- DeepFake
- Robotics/Automation
- Predictive Analytics (stocks, healthcare, sales, insurance, win/loss, etc.)
- Data Analytics Competitions (https://www.kaggle.com/competitions)
- Completely mimicking human logic/abilities/reasoning
  - Nearly impossible
- Neural Implant (https://neuralink.com/)
- Deep Learning

Social Concerns

- Will AI take over the jobs?
- Will AI take over the world?
- Are we living in a simulation?

DIY

- Practical Deep Learning Course: https://course.fast.ai/
- Mastering ML: https://machinelearningmastery.com/start-here/
- Google ML: https://ai.google/education
- AI Playbook: http://aiplaybook.a16z.com/docs/intro/getting-started
- Toward Data Science: https://towardsdatascience.com/
- Coursera Deep Learning Courses: https://www.deeplearning.ai/programs/
- Google Colab: https://colab.research.google.com/


YES!
WE MADE IT TO THE END