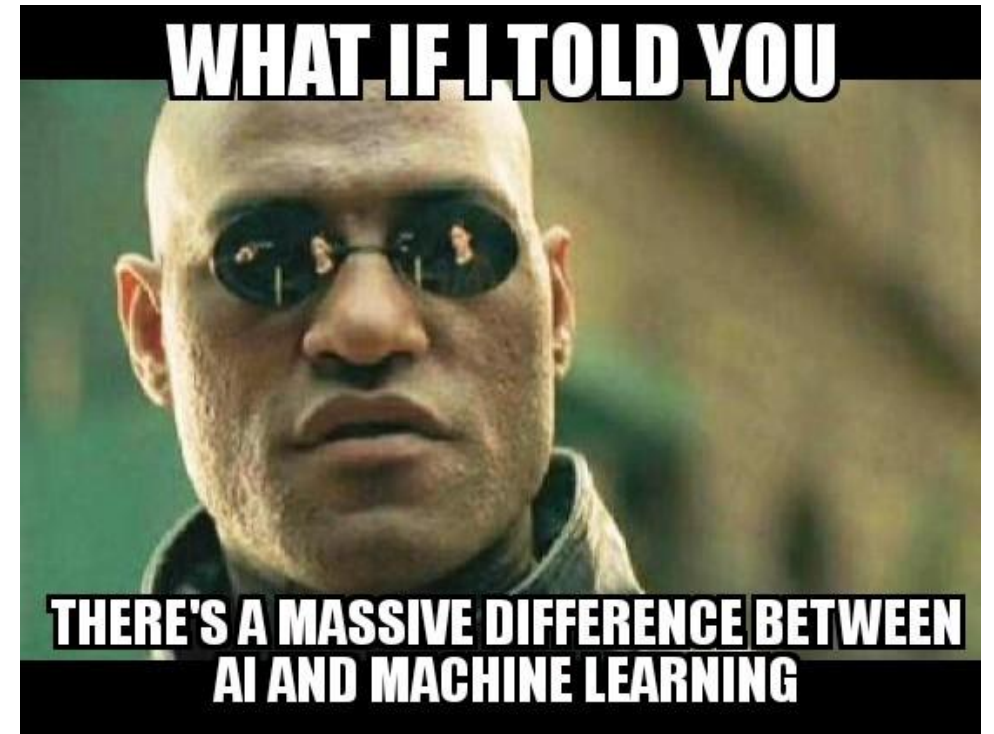


Machine Learning and Artificial Intelligence (with Sports)

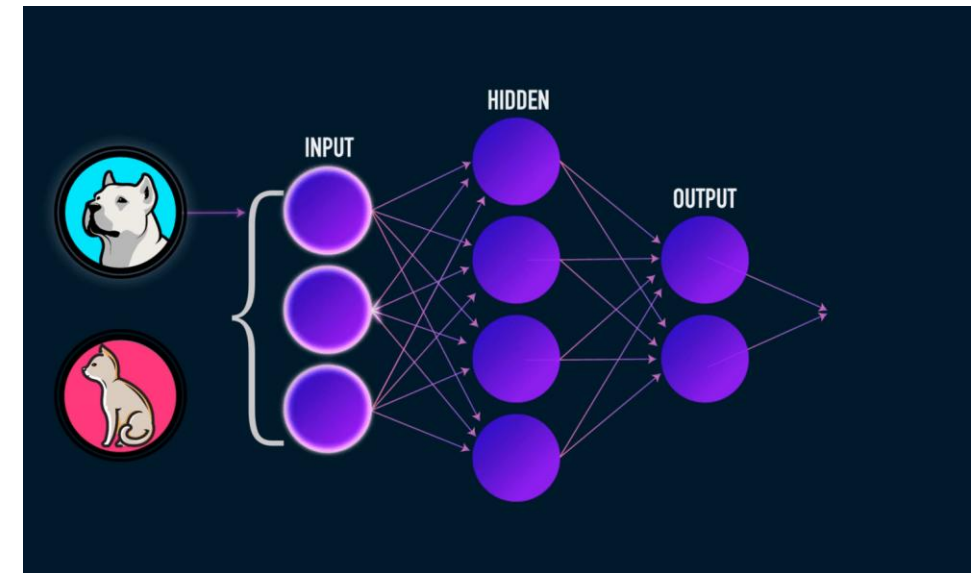
Dr. Vitaly Ford

Computer Science and Math Department



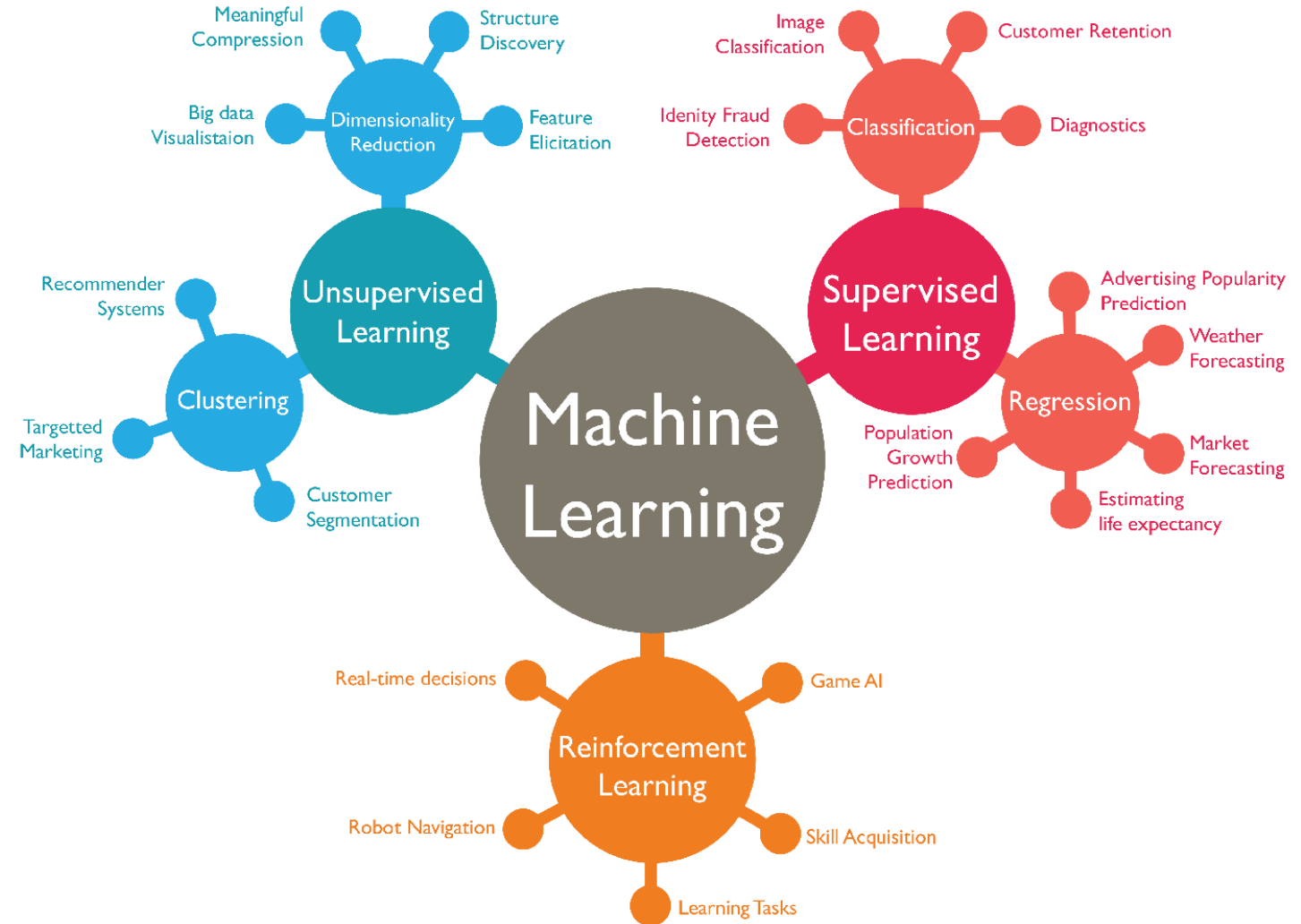
Machine Learning (ML): Knowledge

- 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



ML Types

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





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

<https://news.stanford.edu/2018/12/12/artificial-intelligence-report-finds-advances-working-human-language-global-reach/>

NBA Data Science 1

<https://youtu.be/MpLHMKToIVw?t=158>

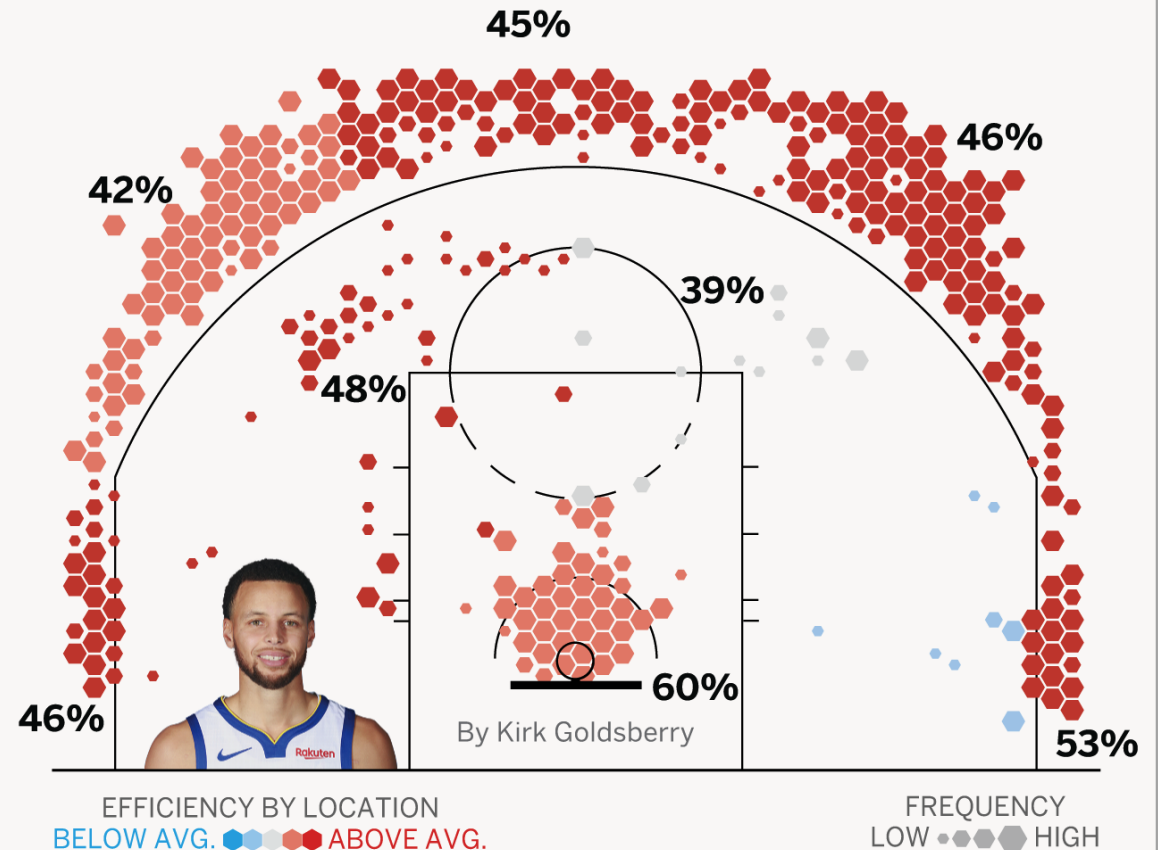


NBA Data Science 2

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

STEPHEN CURRY, 2018-19

Scored 36.5 points per game in the West Finals



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



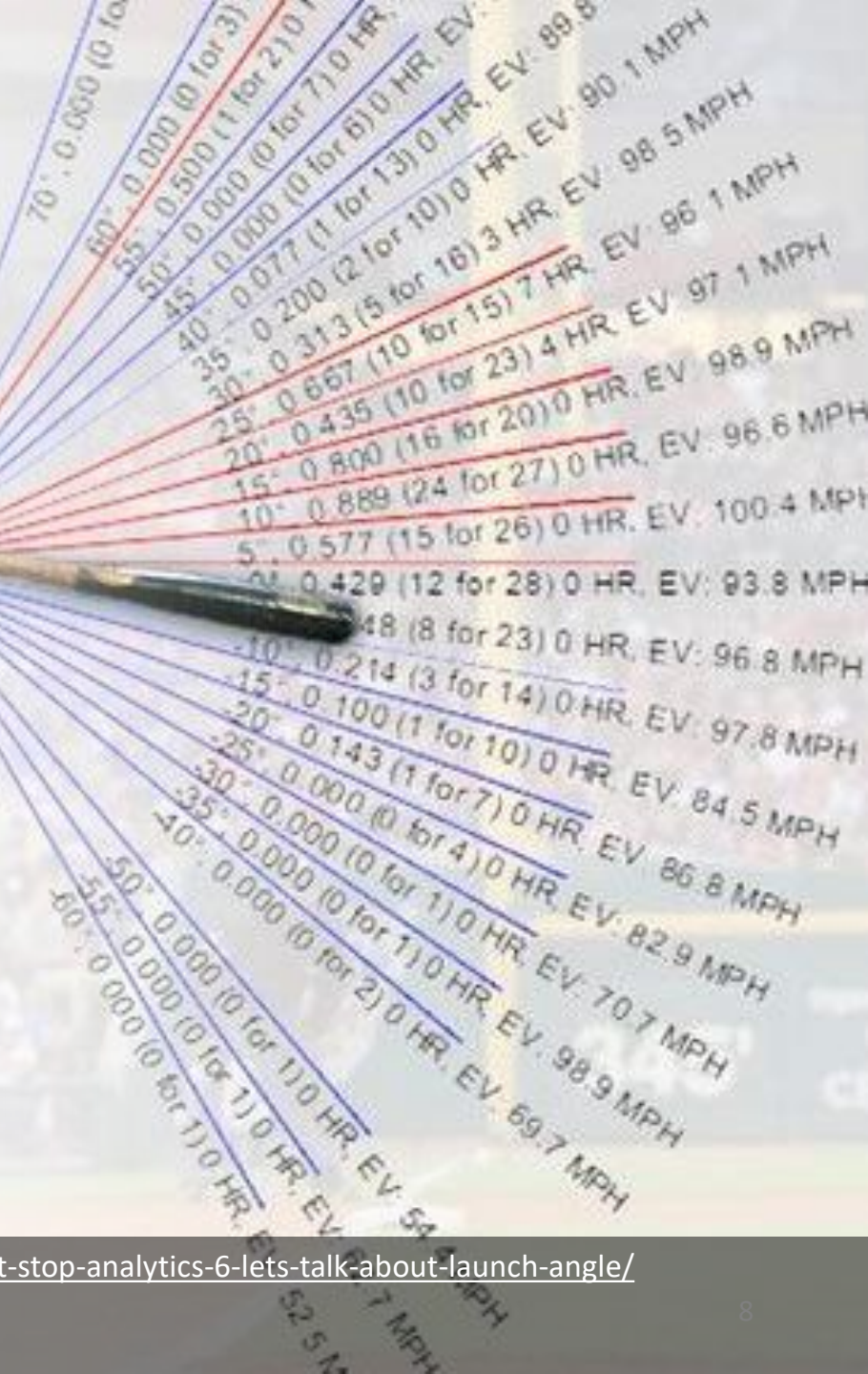
<https://youtu.be/A3JQCsM2qfA?t=66>

7

Moneyball

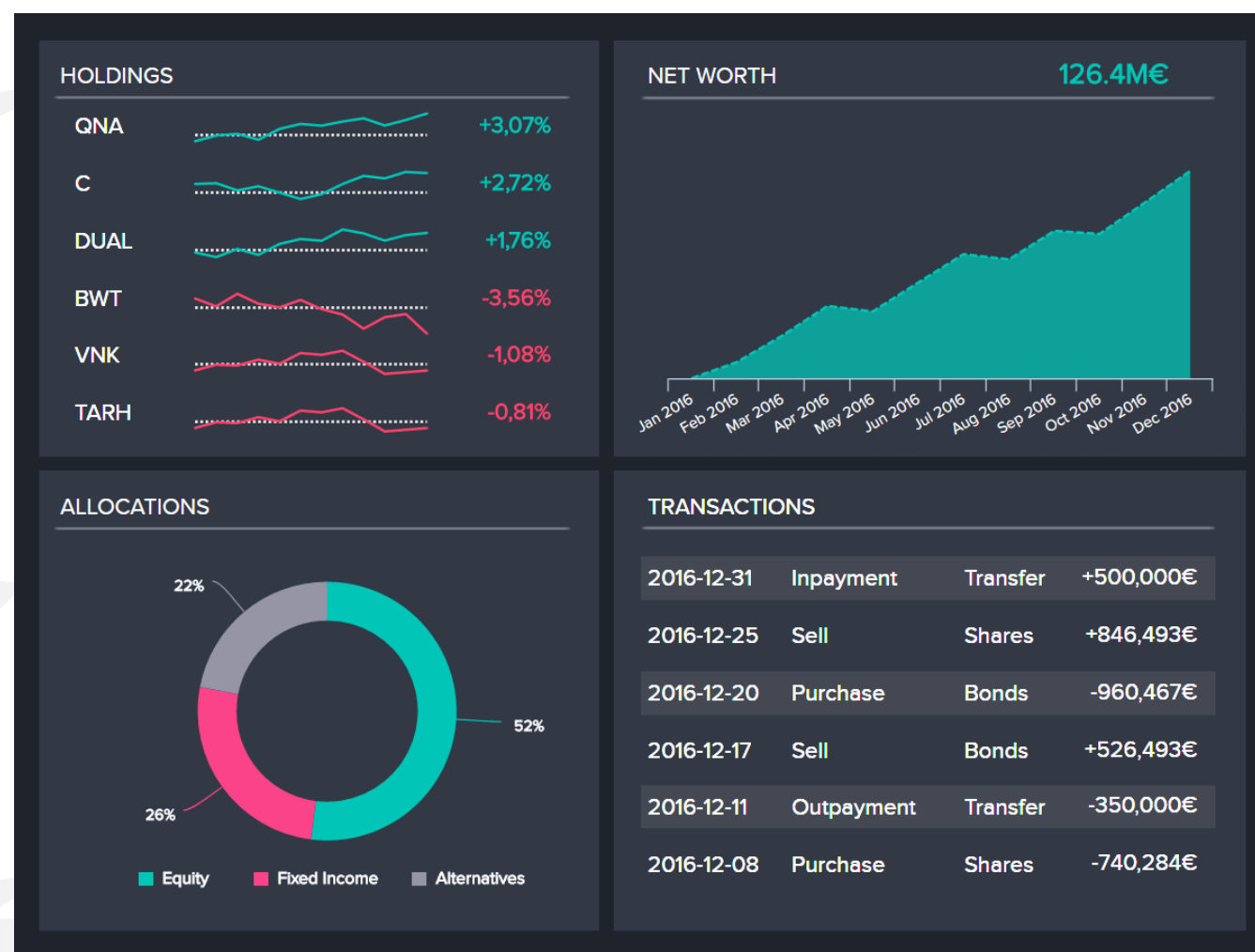
<https://www.youtube.com/watch?v=AiAHIZVgXjk>

<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>

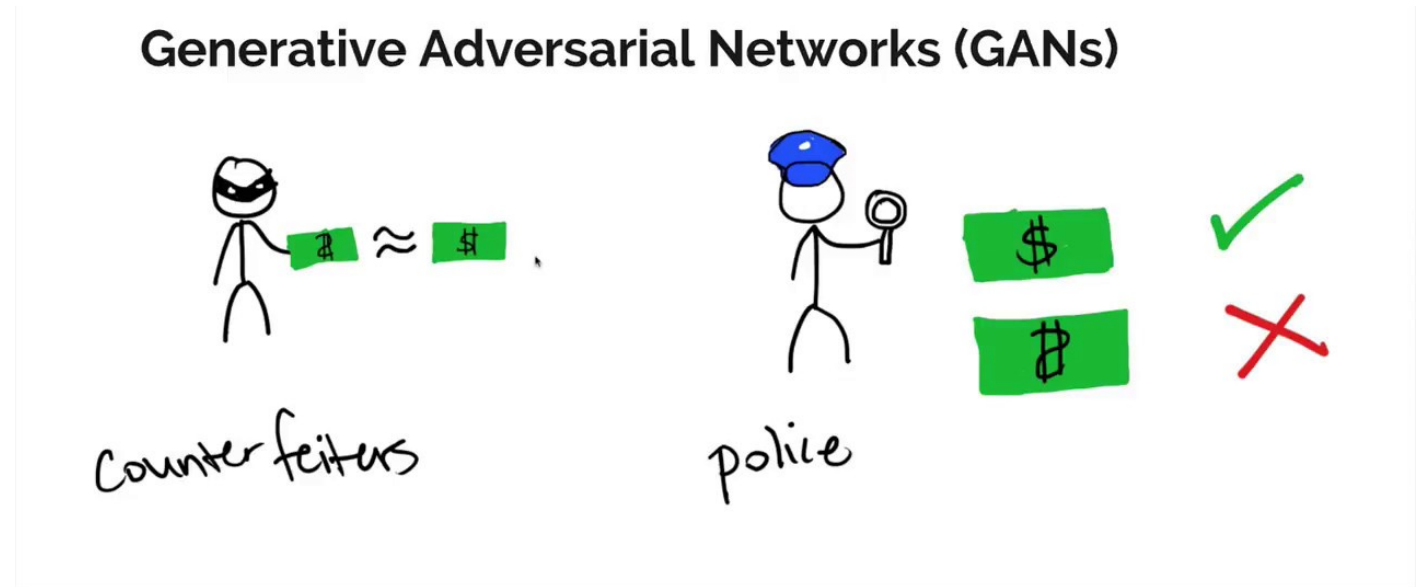


<https://deepmind.com/blog/article/alphazero-shedding-new-light-grand-games-chess-shogi-and-go>



DeepMind

<https://www.deepmind.com/>



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



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>

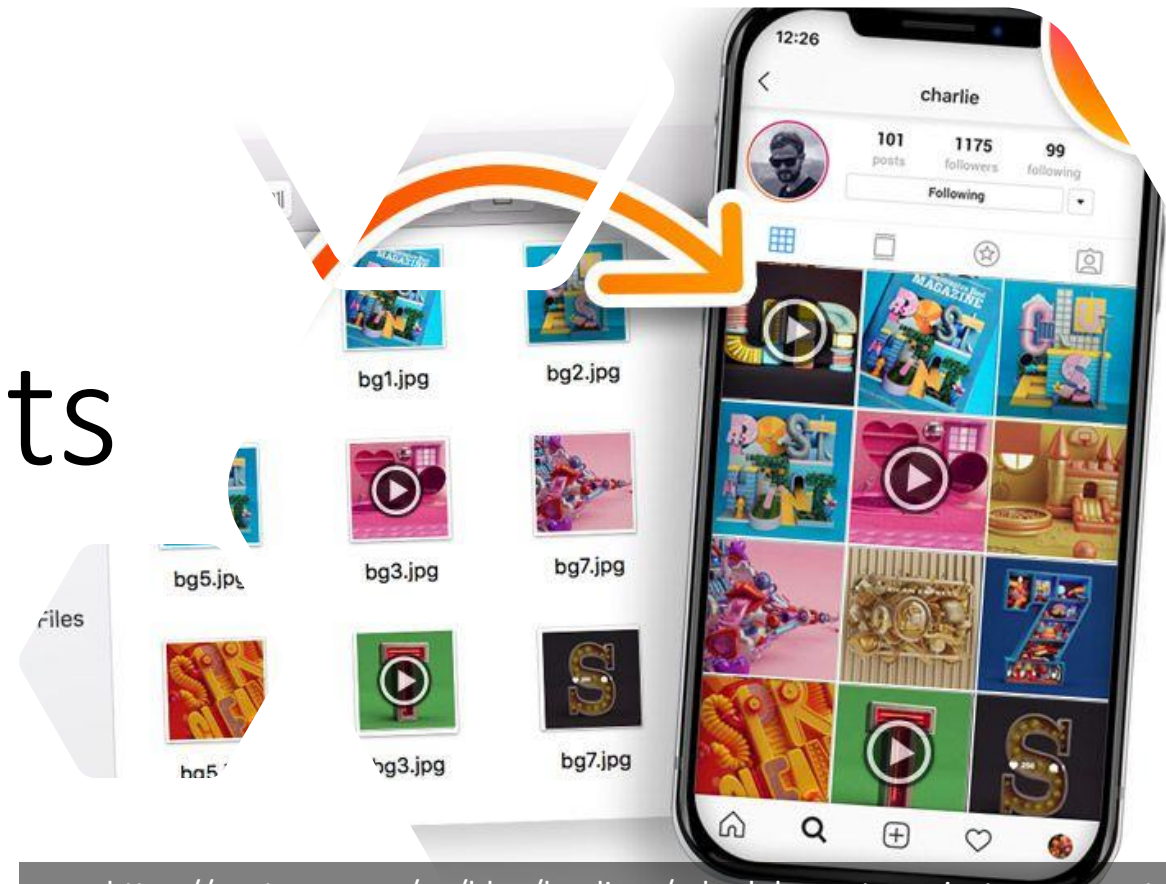
<https://www.youtube.com/watch?v=aFuA50H9uek>

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/>

Dr. Vitaly Ford | slides: <https://vford.me> → My talks

