Teaching Advanced AI Development Techniques With a New Master's Program in Artificial Intelligence Engineering

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Gartner Research

Top Strategic Technology Trends for 2022: AI Engineering

Published: 18 October 2021

Summary

Despite the hype, it might surprise you to hear that AI is still undervalued. Most AI value is generated from one-off, point-to-point solutions. IT leaders who industrialize AI solution delivery will create vastly greater value faster and compound these gains as AI solutions scale enterprisewide.

AI Engineering

IT leaders struggle to integrate AI within applications, wasting time and money on AI projects that are never put in production, or struggling to retain value from AI solutions once released. AI engineering is an integrated approach for operationalizing AI models.

"For fusion teams working on AI, the real differentiator for their organizations will lie in their ability to continually enhance value through rapid AI change," said Groombridge. "By 2025, the 10% of enterprises that establish AI engineering best practices will generate at least three times more value from their AI efforts than the 90% of enterprises that do not."

https://www.gartner.com/en/documents/4006919

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Why Do Data Science Projects Fail?

87% of data science projects never make it into production

https://venturebeat.com/2019/07/19/why-do-87-of-data-science-projects-never-make-it-into-production/

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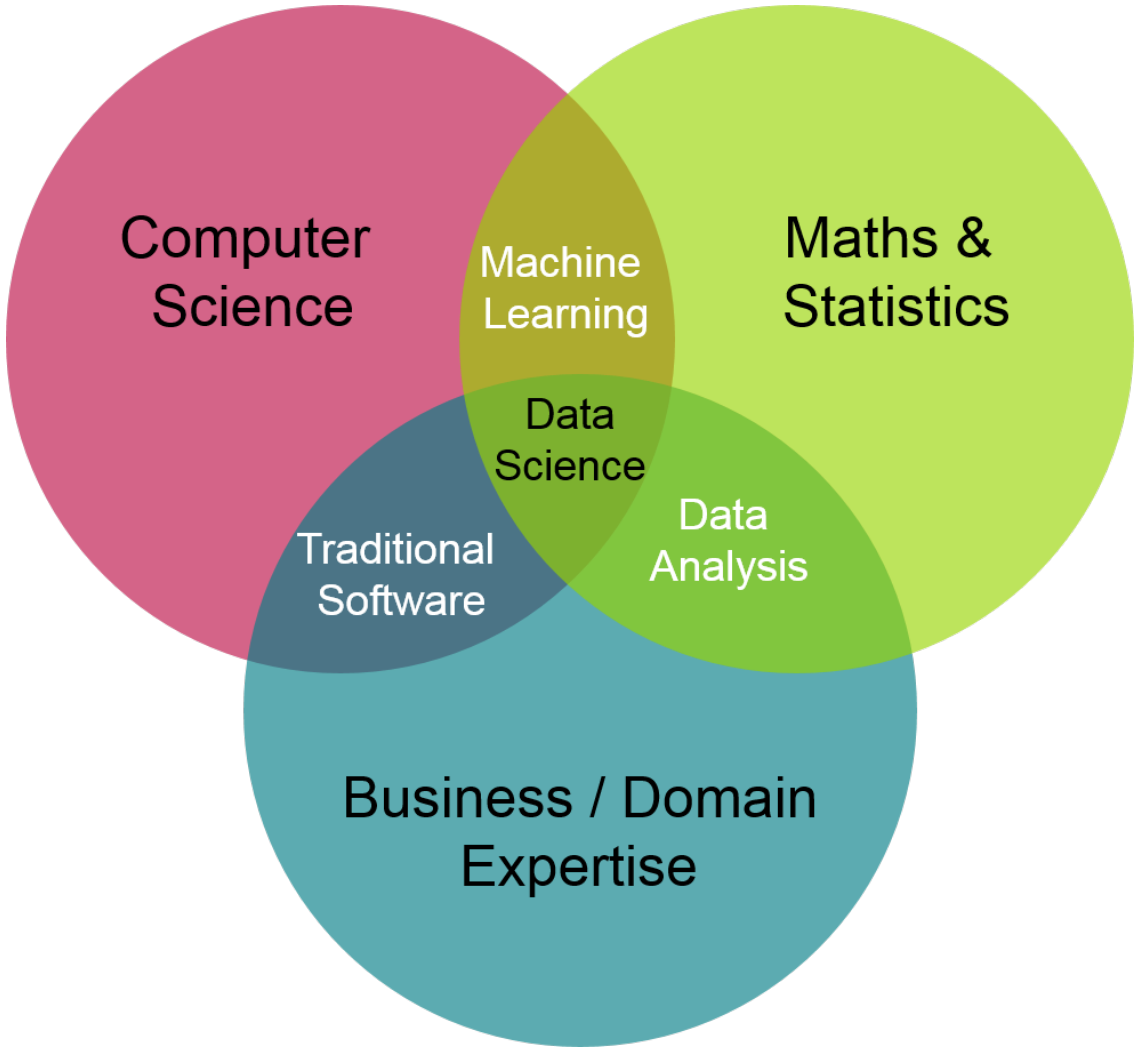
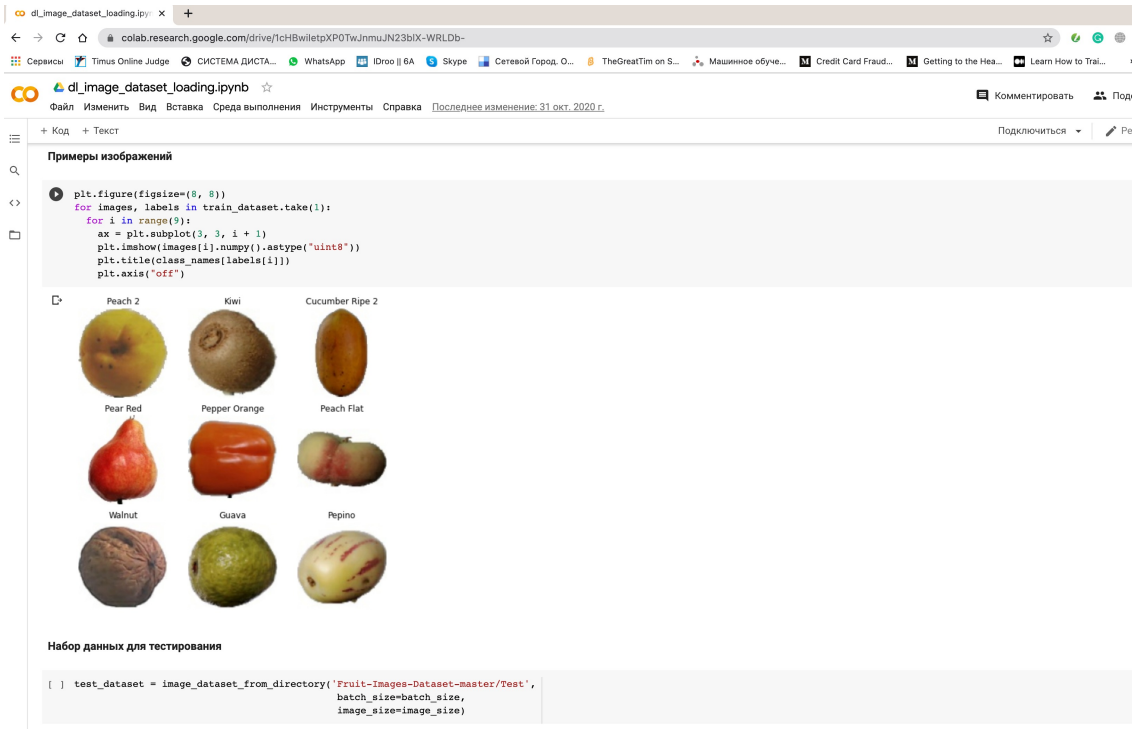
Data Scientists Lacks Software Engineering Skills





https://venturebeat.com/2019/07/19/why-do-87-of-data-science-projects-never-make-it-into-production/

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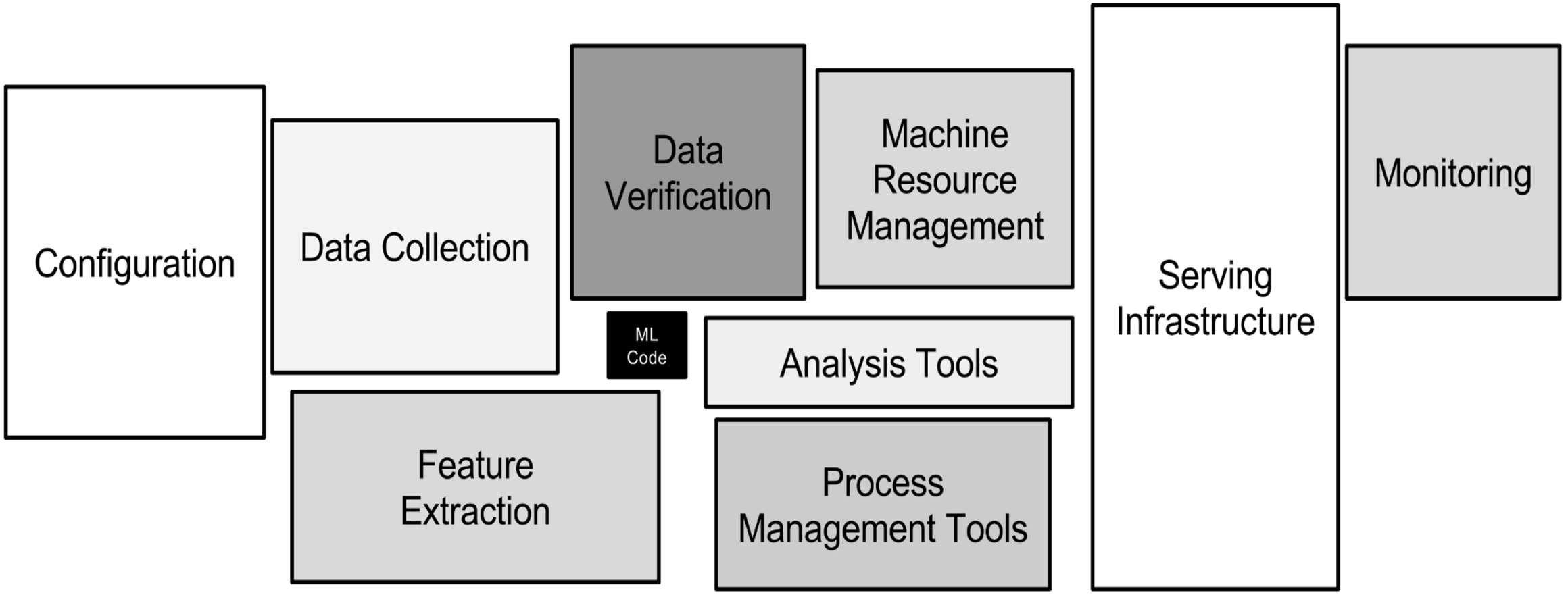
Hidden technical debt in Machine learning systems



D. Sculley et al. ***Hidden technical debt in Machine learning systems****. In Proceedings of the 28th International Conference on Neural Information Processing Systems - Volume 2 (NIPS'15)*

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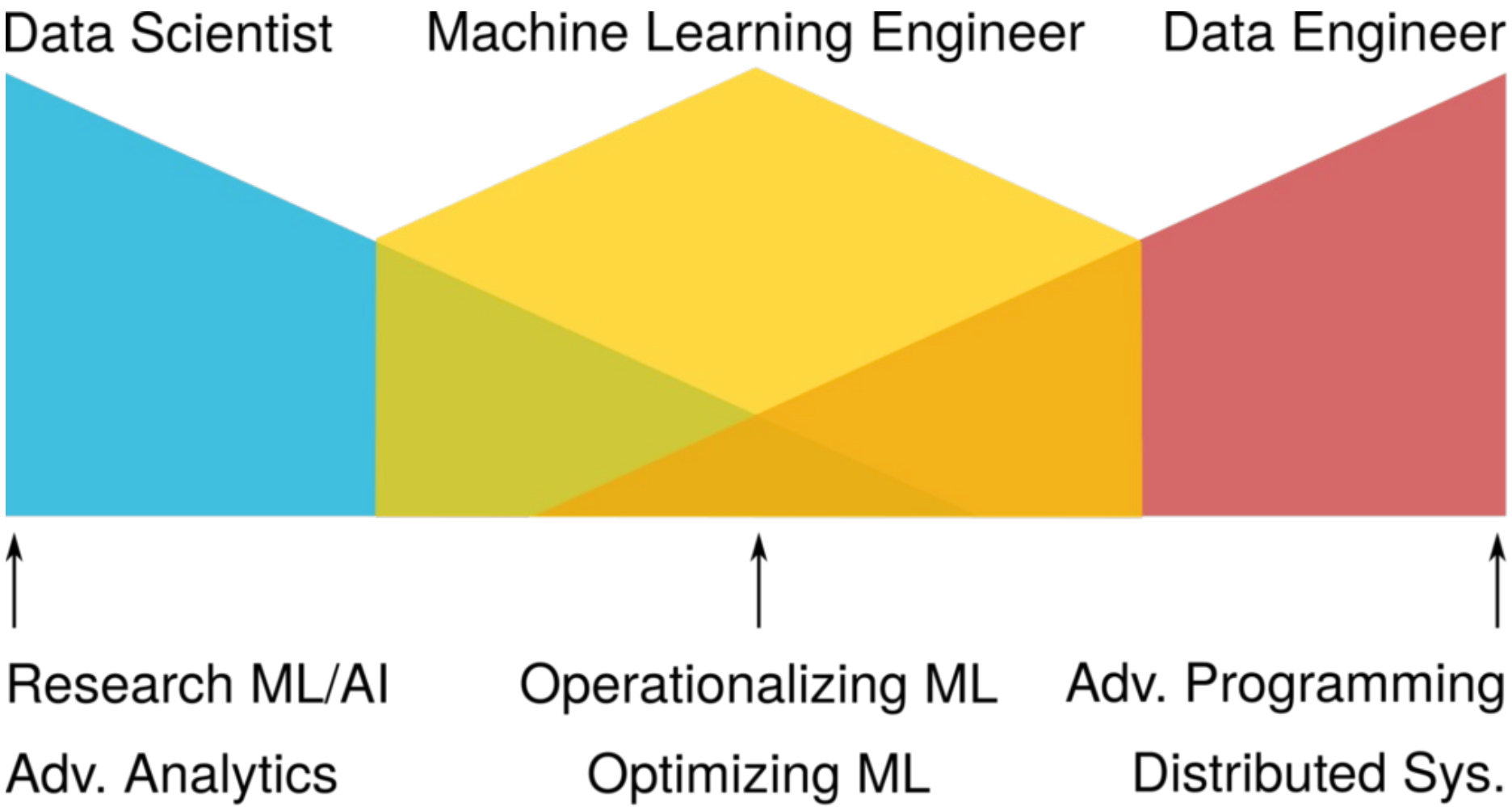
ML/AI Engineer



BDI

BIG DATA INSTITUTE

For more information go to http://bigdatainstitute.io

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Related Work

- AI engineer bachelor program at Fontys University of Applied Sciences, Eindhoven, Netherlands
  - Data Engineering, MLOps and industry collaboration
- Master's of Science in Analytics at University of Chicago, US
  - Data Engineering, Automated Machine Learning, Cloud Computing, Parallel and Distributed Computing
- Artificial Intelligence and Machine Learning Master's program at National University of Science and Technology MISIS
- Machine Learning Engineering Master's program at ITMO University

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Key Skills of AI Engineer

Machine Learning

+

Software Engineering

+

Soft Skills

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AI Engineering Master's Program at UrFU

- AI Engineering Master's Program at UrFU
  - Supported by the Ministry of Science and Higher Education of the Russian Federation
  - The program was developed in 2021
  - ~90 students in 2022
- Master's Program site – https://aiengineer.urfu.ru/
- Social Networks
  - https://t.me/aimasters
  - https://vk.com/public_ai_m

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AI Engineering Master's Program Curriculum

<table>
<tr><th>1st semester</th><th>2nd semester</th><th>3rd semester</th><th>4th semester</th></tr>
<tr><td colspan="3">Mathematical Foundations of Artificial Intelligence</td><td>Educational practice</td></tr>
<tr><td colspan="3">Machine Learning</td><td>Industrial Practice, Research Work</td></tr>
<tr><td colspan="3">Foreign Language in the Field of Business and Professional Communication</td><td rowspan="9">Master Thesis</td></tr>
<tr><td colspan="2">Software Engineering</td><td>Computer Vision</td></tr>
<tr><td>Linux Operating System</td><td>Deep Learning in Python</td><td rowspan="2">Natural Language Processing</td></tr>
<tr><td>Python Programming</td><td>Machine Learning Operations</td></tr>
<tr><td>Data Engineering</td><td>Data access methods (Elective Course)</td><td>AI Project Management (Elective Course)</td></tr>
<tr><td rowspan="3">Philosophy and Methodology of Science</td><td>Introduction to SQL (Elective Course)</td><td>Technical Communications (Elective Course)</td></tr>
<tr><td>Data Science Competitions (Elective Course)</td><td>Data Science Competitions (Elective Course)</td></tr>
<tr><td>Time Series Analysis (Elective Course)</td><td>Artificial Intelligence for Information Security (Elective Course)</td></tr>
<tr><td>Project Development Workshop</td><td>Project Development Workshop</td><td>Project Development Workshop</td></tr>
</table>

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University Partners

Тюменский государственный университет
ТюмГУ

Алтайский государственный университет
АГУ 1973

КГЭУ

Владимирский государственный университет
ВлГУ

Сибирский федеральный университет | Siberian Federal University

Самарский политех
Опорный университет

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Industry Partners

УЦСБ

NAUMEN

Контур

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Possible Collaboration

- Joint Master's Program
  - Full AI Engineering Master's Program
  - Individual courses or modules (5 online couses)
- Staff training
  - Machine Learning Applications (neural networks, computer vision, natural language processing)
  - AI Application Development (python, Linux, software engineering)
- Student Projects
  - Industry Partners
  - Research

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Questions?