The Rise of DevOps for Machine Learning: From Manual Model Tracking to Scalable AI

The State of Development and Operations of AI Applications 2019 Report

According to data science and machine learning (ML) professionals at organizations where AI is in production:

88% AI has either been impactful or highly impactful for their company's competitive advantage

63.2% spending between $500,000 and $10 million on their AI initiatives

Despite this financial commitment, data science and ML teams continue to experience issues

33% duplicating their work

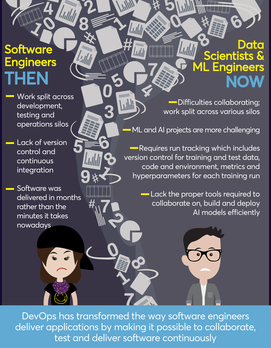
27.6% rewriting models after team members leave

27% justifying the value of their projects to the wider business

24.6% slow and unpredictable AI projects

BACK TO THE FUTURE:

Data scientists today are reliving the chaos software engineers faced in the 1990s



DevOps has transformed the way software engineers deliver applications by making it possible to collaborate, test and deliver software continuously

The Disjointed State of AI Development Today

The manual tools and processes that are being used by many to operationalize AI are insufficient for the job and do not support the required scaling and governance

Top tools ML engineers use to collaborate with each other

44.5% have a shared spreadsheet for metrics which they update manually

38% sit in the same office and work closely together

33% use Git for code collaboration only, leaving out data, environment and metrics

90% either manually track the model provenance—a complete record of all the steps taken to create an AI model—or do not track provenance at all

52.4% manually track the provenance of their AI models, data and code by manually documenting inputs and outputs

37% don't track the provenance of their AI models at all

64.4% take between 7 and 18 months to move their ML and AI models from idea to production, proving today's reality of slow, unpredictable AI projects

The Path to Scalable AI: DevOps for ML

Although many organizations have AI broadly in use and are investing significantly in AI tools, platforms and services, ML and data science teams are still unequipped to achieve reproducibility, accountability, collaboration and continuous delivery across the AI model lifecycle.

39% send models to another team for deployment into production

24.2% don't deploy models into production

31.8% deploy AI projects manually onto servers or VMs

18.6% don't currently, but would like to deploy their models into production

Lessons learned from DevOps for software engineering need to be applied to ML

With a DevOps approach to the AI application delivery process, data science and ML teams can:

Eliminate the need for manual tracking of the ML model development lifecycle

Collaborate effectively and remain in control of their AI models

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