HOW I STARTED

LEARNING ML

From Developer to AI Research Scientist

Bridging Theory and Practice

I consider myself an AI Research Scientist who loves exploring new AI trends and understanding their background. But what truly excites me is turning scientific research into real products. I believe every breakthrough in AI science eventually becomes a solution to real-world problems.

Why this matters:

- Research needs practical application
- Products solve user problems
- Innovation drives development
- Theory enables practice

The Beginning (2016)

Back in 2016, machine learning wasn't as popular as it is today. Everyone talked about it, but few were actually implementing it. As a developer with years of experience, I faced the classic beginner's dilemma - where to start on this complex journey?

Initial challenges:

- Choosing between mathematics and statistics
- Finding the right learning path
- Selecting reliable resources
- Building proper foundations

The Foundation Course

Everything changed when I discovered a comprehensive Stanford machine learning course. It wasn't just another online course - it provided all the necessary calculus and ML basics needed to start. The best part? You don't need to know everything in depth to begin building.

Key learning approach:

- Focus on understanding concepts
- Learn necessary mathematics
- Master core algorithms
- Write everything by hand

Resources

Stanford CS229: Machine Learning Course, Lecture 1 - Andrew Ng (Autumn 2018)

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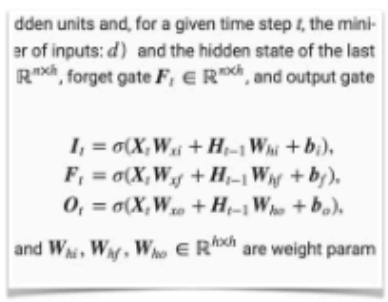
DIVE INTO DEEP LEARNING

D2L.ai: Interactive Deep Learning Book with Multi-Framework Code, Math, and Discussions

Continuous Integration failing

Book website | STAT 157 Course at UC Berkeley

The best way to understand deep learning is learning by doing.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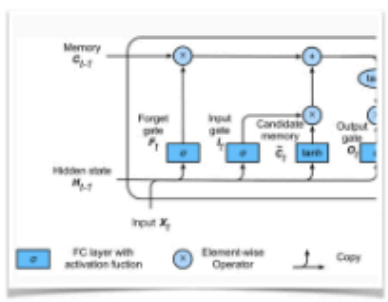
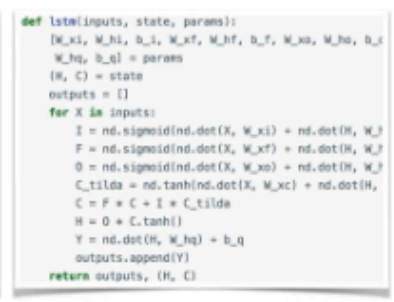
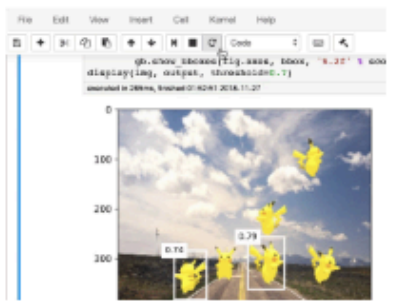
$\mathbb{R}^{n\times h}$, forget gate $\boldsymbol{F}_t \in \mathbb{R}^{n\times h}$, and output gate

$$\boldsymbol{I}_t = \sigma(\boldsymbol{X}_t \boldsymbol{W}_{xi} + \boldsymbol{H}_{t-1} \boldsymbol{W}_{hi} + \boldsymbol{b}_i),$$
$$\boldsymbol{F}_t = \sigma(\boldsymbol{X}_t \boldsymbol{W}_{xf} + \boldsymbol{H}_{t-1} \boldsymbol{W}_{hf} + \boldsymbol{b}_f),$$
$$\boldsymbol{O}_t = \sigma(\boldsymbol{X}_t \boldsymbol{W}_{xo} + \boldsymbol{H}_{t-1} \boldsymbol{W}_{ho} + \boldsymbol{b}_o),$$

and $\boldsymbol{W}_{hi}, \boldsymbol{W}_{hf}, \boldsymbol{W}_{ho} \in \mathbb{R}^{h\times h}$ are weight param







Moving to Deep Learning

After mastering the basics, I needed to learn how to actually implement these concepts. I found several excellent resources that combined practical knowledge with theoretical understanding, including a particularly challenging but invaluable deep learning book.

Essential resources:

- Framework documentation
- Technical research papers
- Implementation guides
- Community tutorials

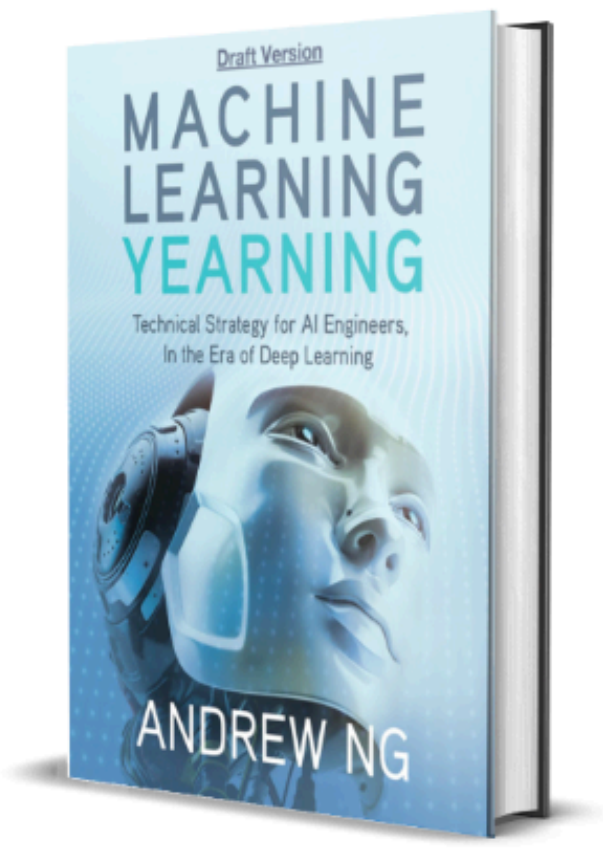
Resources

FREE EBOOK

Get The Machine Learning Yearning Book By Andrew NG

An introductory book about developing ML algorithms

DOWNLOAD NOW



Deep Learning

An MIT Press book

Ian Goodfellow and Yoshua Bengio and Aaron Courville

Exercises Lectures External Links

The Deep Learning textbook is a resource intended to help students and practitioners enter the field of machine learning in general and deep learning in particular. The online version of the book is now complete and will remain available online for free.

The deep learning textbook can now be ordered on Amazon.

For up to date announcements, join our mailing list.

Citing the book

To cite this book, please use this bibtex entry:

```
@book{Goodfellow-et-al-2016,
    title={Deep Learning},
    author={Ian Goodfellow and Yoshua Bengio and Aaron Courville},
    publisher={MIT Press},
    note={\url{http://www.deeplearningbook.org}},
    year={2016}
}
```

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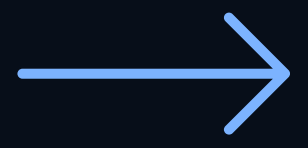
Hands-on Learning Method

My most effective learning technique was surprisingly old-school - manually retyping code from various GitHub repositories. While it might seem inefficient, this method forced me to understand every line of code and its purpose in the bigger picture.

Learning technique:

- Manual code rewriting
- Deep code analysis
- Pattern recognition
- Implementation practice



Resources

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Zero to Mastery Deep Learning with TensorFlow

All of the course materials for the Zero to Mastery Deep Learning with TensorFlow course.

This course will teach you the foundations of deep learning and how to build and train neural networks for various problem types with TensorFlow/Keras.

Important links

- 📹 Watch the first 14-hours of the course on YouTube (notebooks 00, 01, 02)
- 📖 Read the beautiful online book version of the course
- 💻 Sign up to the full course on the Zero to Mastery Academy (videos for notebooks 03-10)
- 🤔 Got questions about the course? Check out the livestream Q&A for the course launch
- 📝 Get a quick overview of TensorFlow with the TensorFlow Cheatsheet

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16_cnn_cifar10_small_image_classification	cifar small image tutorial update	3 years ago
17_data_augmentation	ENH: moved all the active tutorial content from py/deeple...	3 years ago

Real-World Applications

The real learning began with actual problem-solving. I started with classic machine learning challenges and gradually moved to more complex problems. This hands-on experience was crucial for understanding how ML works in practice.

Project progression:

- Basic classification problems
- Advanced regression tasks
- Time series predictions
- Market analysis systems

Resources

KAGGLE · GETTING STARTED PREDICTION COMPETITION · ONGOING

Titanic - Machine Learning from Disaster

Start here! Predict survival on the Titanic and get familiar with ML basics

Overview Data Code Models Discussion Leaderboard Rules

HOME CREDIT GROUP · FEATURED PREDICTION COMPETITION · 6 YEARS AGO

Home Credit Default Risk

Can you predict how capable each applicant is of repaying a loan?

Overview Data Code Models Discussion Leaderboard Rules

KAGGLE · GETTING STARTED PREDICTION COMPETITION · ONGOING

House Prices - Advanced Regression Techniq

Predict sales prices and practice feature engineering, RFs, and gradient boosting

Overview Data Code Models Discussion Leaderboard Rules

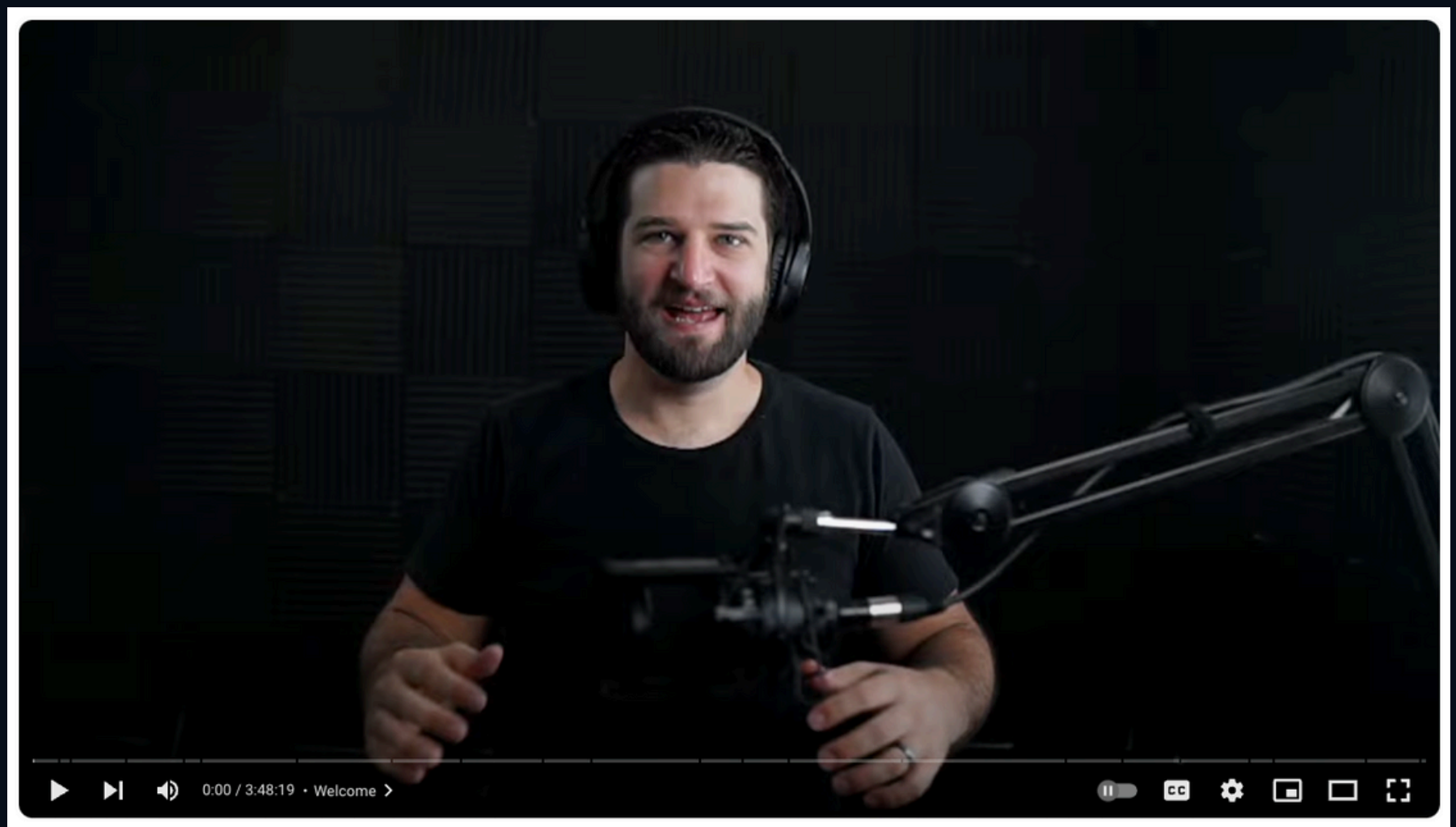
Deployment Expertise

Before specializing further, I needed to learn how to deploy ML models effectively. I discovered that a simple framework and the right cloud provider can make deployment straightforward and cost-effective, whether you're working with basic models or complex GPT systems.

Deployment essentials:

- Fast API implementation
- Cloud service utilization
- Endpoint creation
- Cost optimization

Resources


0:00 / 3:48:19 • Welcome
AI as an API - Part 1 - Train an ML Model and turn it into an Rest API using Keras, FastAPI & NoSQL
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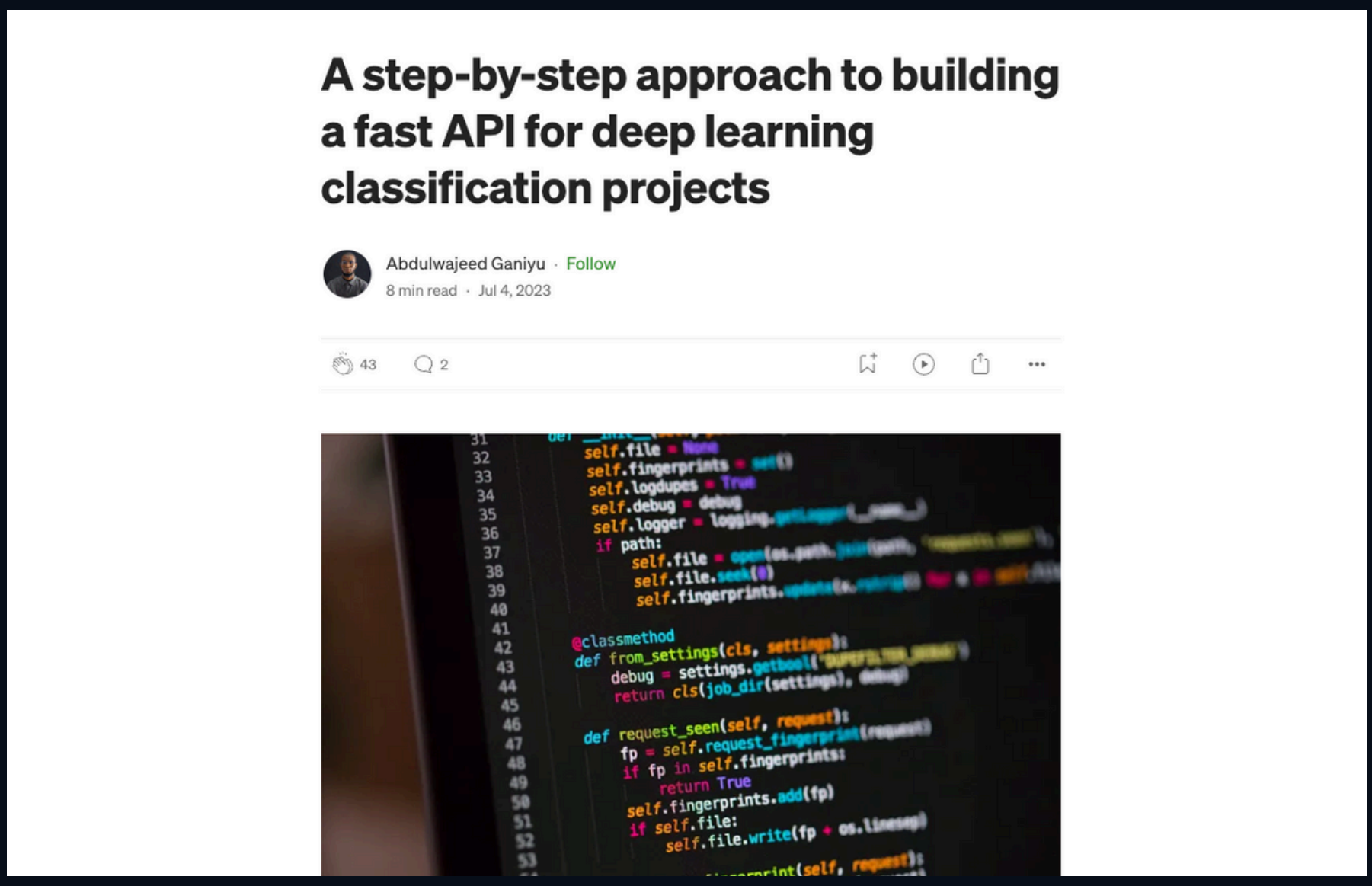
A step-by-step approach to building a fast API for deep learning classification projects
Abdulwajeed Ganiyu · Follow
8 min read · Jul 4, 2023
43
2

Specializing in NLP (2020)

My career took a significant turn when I specialized in Natural Language Processing. Starting with the Transformer architecture and BERT models, I gradually moved to more advanced applications. This foundation is crucial as 99% of today's LLM models build on these concepts.

NLP progression:

- Transformer architecture
- Classification tasks
- GPT model adaptation
- Fine-tuning techniques

Resources

Attention Is All You Need

Welcome to the 🤗 Course!

This course will teach you about natural language processing (NLP) using libraries from the Hugging Face ecosystem — 🤗 Transformers, 🤗 Datasets, 🤗 Tokenizers, and 🤗 Accelerate — as well as the Hugging Face Hub. It's completely free and without ads.

Illustrated Guide to Transformers- Step by Step Explanation

Michael Phi · Follow

Published in Towards Data Science · 12 min read · May 1, 2020

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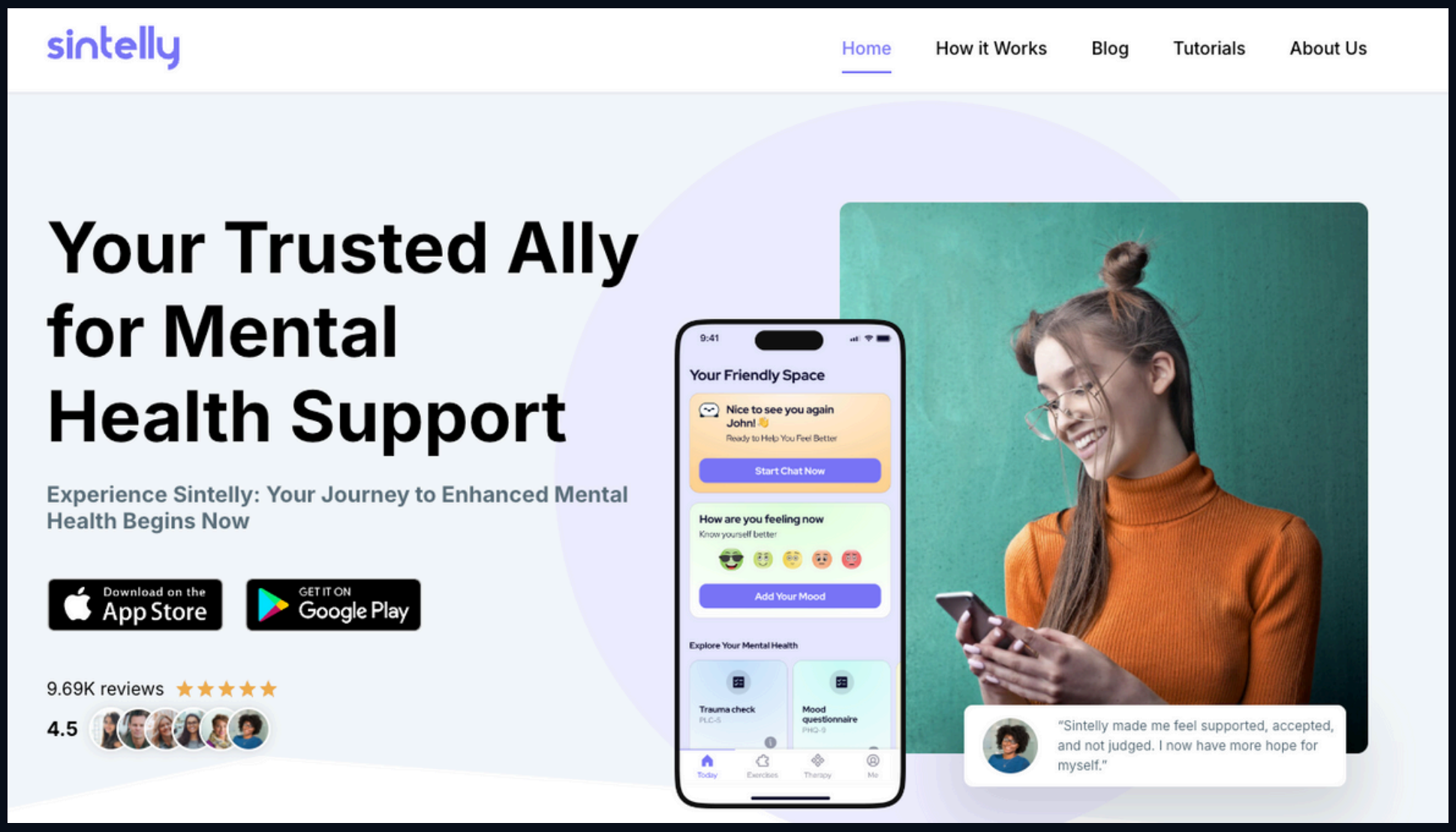
Where I Am Today

After six years in ML, I've developed numerous projects, including an AI well-being support system and advanced stock market analysis tools. My doctoral dissertation combines ML, stock market prediction, and reinforcement learning, representing the culmination of this journey.

Current projects:

- AI well-being mobile app
- Stock market ML systems
- Doctoral research
- Open-source contributions

Show Case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Know yourself better
Add Your Mood
Explore Your Mental Health
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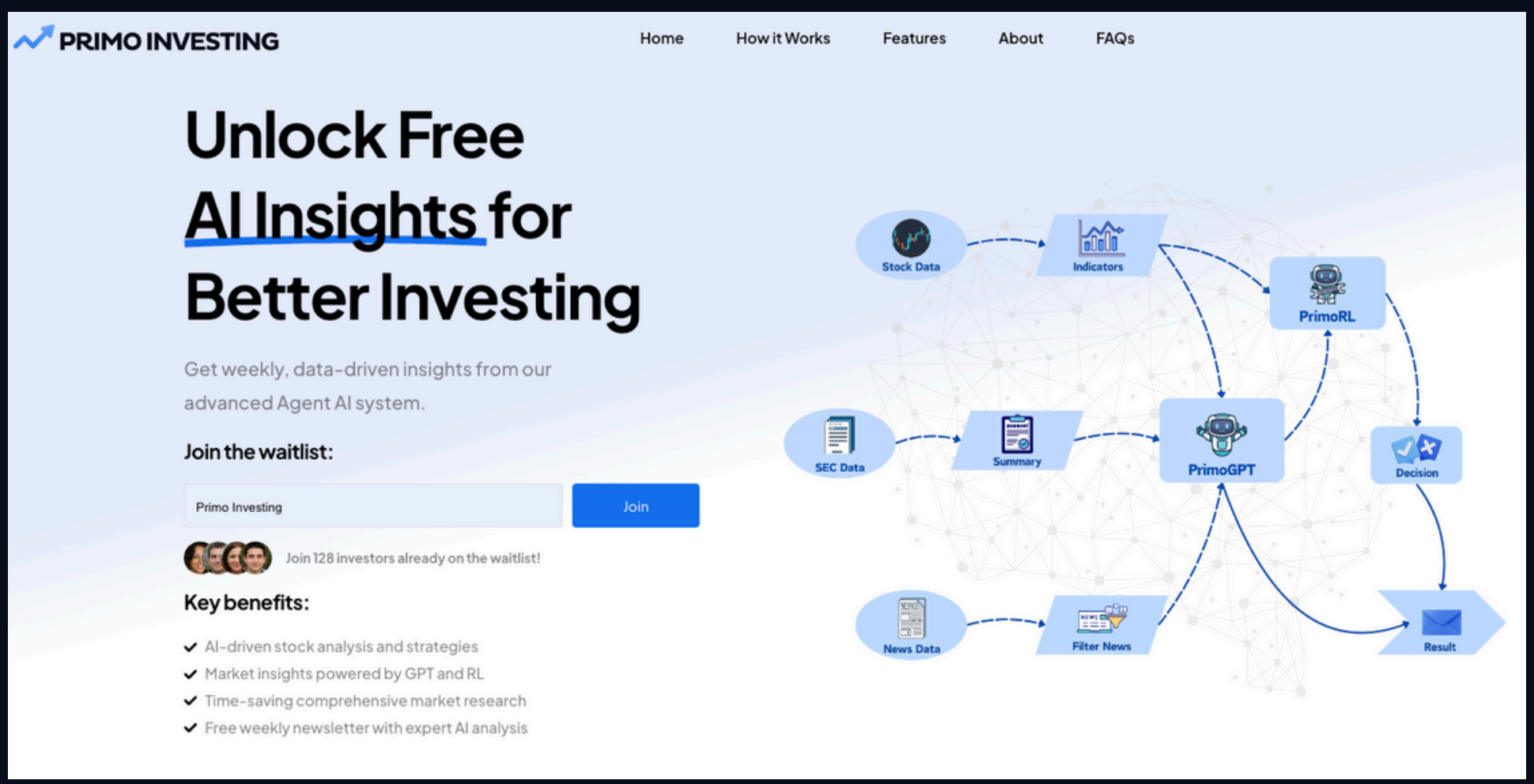
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