

INF367 25H: Selected Topics in Artificial Intelligence

Diamonds and Rust in the AI Treasure Chest

Plan for today

- Recap from last lecture
- Backpropagation
- Deep Learning
- Admin

Backpropagation

Backpropagation

- An algorithm to (finally be able to) train multi-layer neural networks
- Based on the chain rule of differentiation
 - And in that every function involved is differentiable
- It unifies the approach across neural network architectures

Deep Learning

Deep Learning

- Several particularities arise in this *terra incognita*, for example
 - Beyond typical bias-vs-variance tradeoff
 - Optimization landscape
 - Representation learning
 - Self-supervised learning
 - Grokking
 - LLM inner mechanisms

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Course Plan

- Course plan
 - Final lectures
 - Fri 24.10: Language Models
 - Mon 27.10: Language Models
 - Fri 31.10: Selected Topics from Assignment 1

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Course Plan

- Course plan
 - Diamonds and Rust (D&R) Sessions: oral presentations in teams
 - 03.11: What did you just say?
 - 07.11: Hype. Fear. Cope. Seethe
 - 10.11: The illusion of thinking

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Assignments

- Assignment 1 (A1)
 - Received, being processed; to be “graded” on MittUiB
 - Will build the contents of final lecture
- Assignment 2 (A2) (Part Zero)
 - Received, processed
 - Teams are formed, papers are selected and assigned, ready to share
 - A2 published on MittUiB

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Final exam

- Oral exam
 - Topics
 - List of 99% topics to be shared around 04.11
 - List of 100% topics (i.e. including those from D&R sessions) to be shared after last session
 - Dates: to be announced soon, with some preference elicitation request
 - Most likely: December 02, 03, 10, and 11; max. 30 minutes per student

