CRCV REU – Week #9

Project: **Geo-HiPO**

Advisors:
Rohit Gupta, Parth Kulkarni, Dr. Shah

David Rivard

07/25/2025

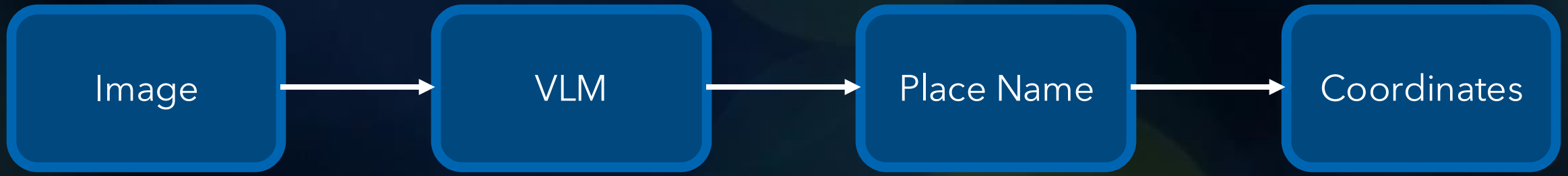
Project Overview

Motivation:

- Current Models:
  - Don’t generalize well.
  - Don’t reason spatially.
  - Don’t use a ground-based error.

Research Question:

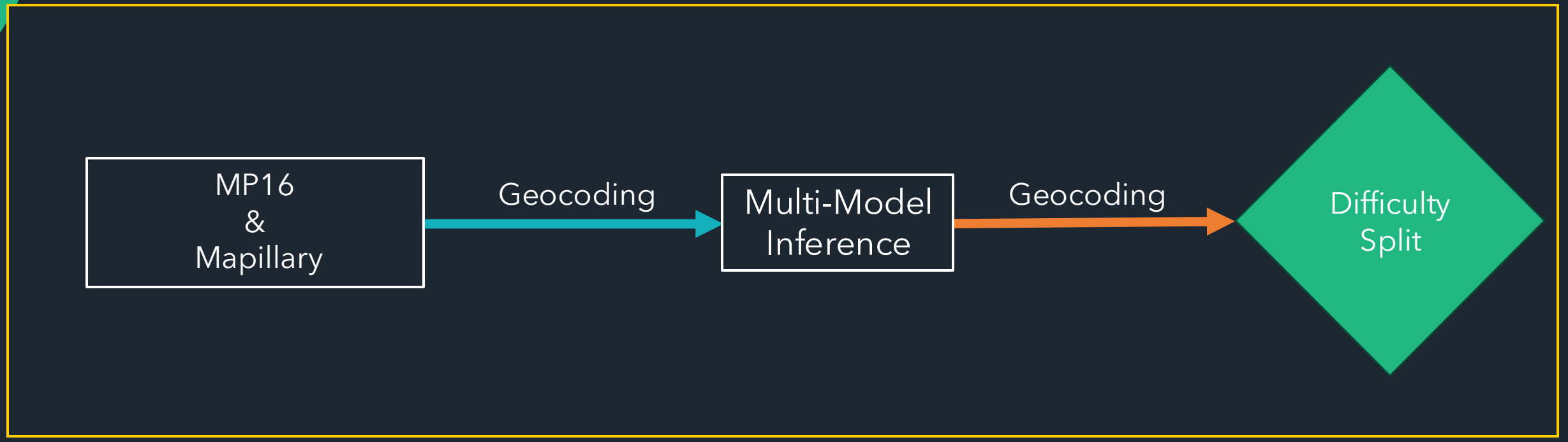
- Can we improve geolocation accuracy by **teaching vision-language models to reason location like humans?**



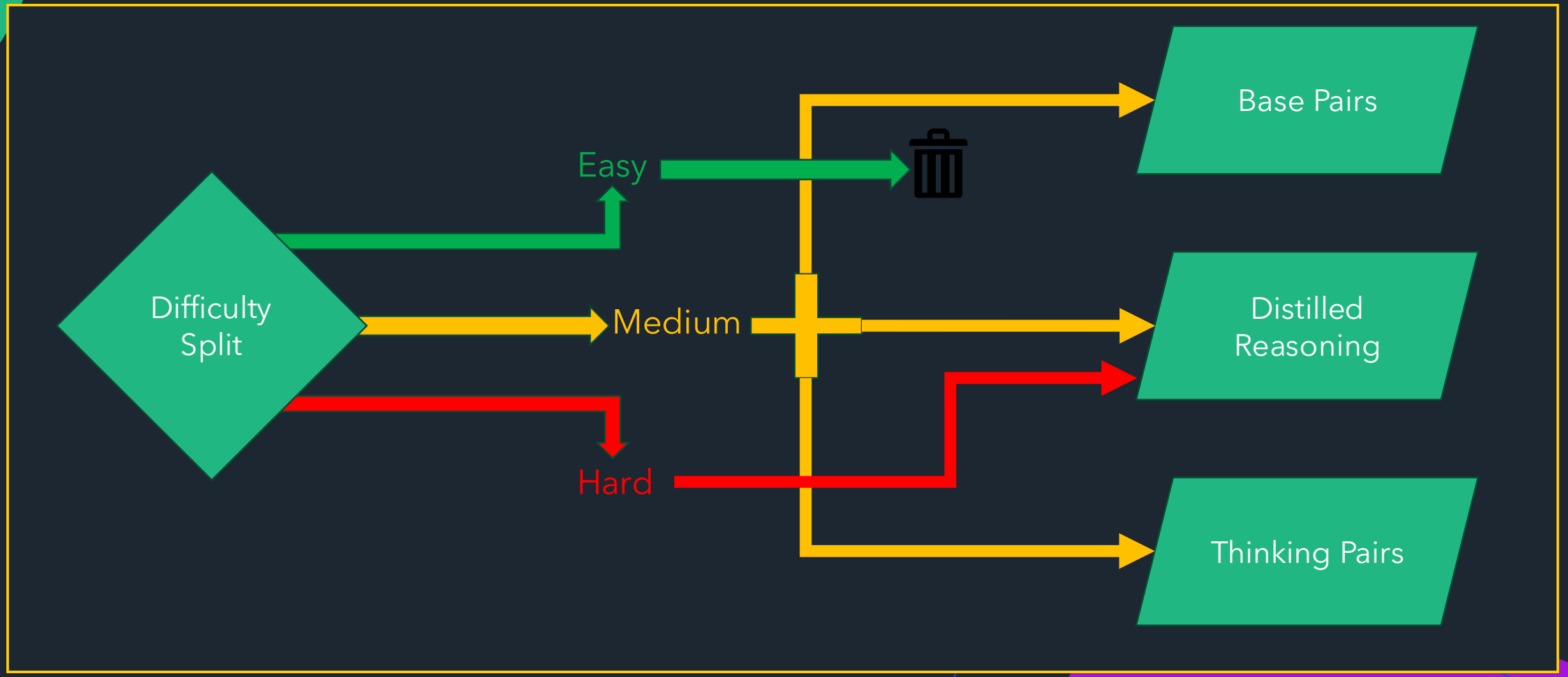
This Week's Focus

- Generating distilled reasoning dataset with Kimi-VL
- Finetuning model on reasoning dataset
- Generating DPO pairs using finetuned model
- DPO training & evaluation on this new dataset
- Splitting DPO dataset into groups:
    - Easy, Medium, Hard

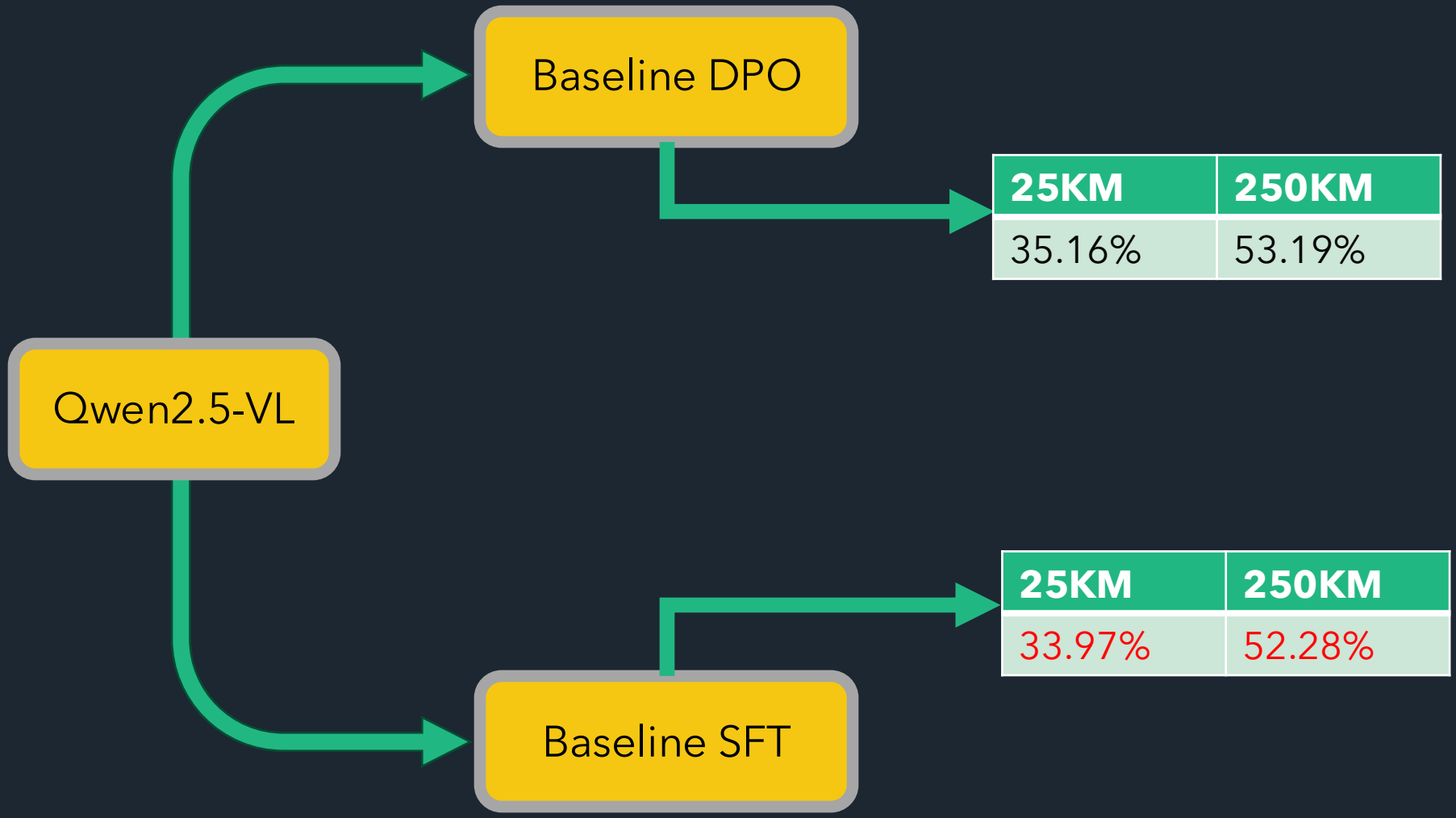
Data Evolution



Data Evolution



Model Evolution

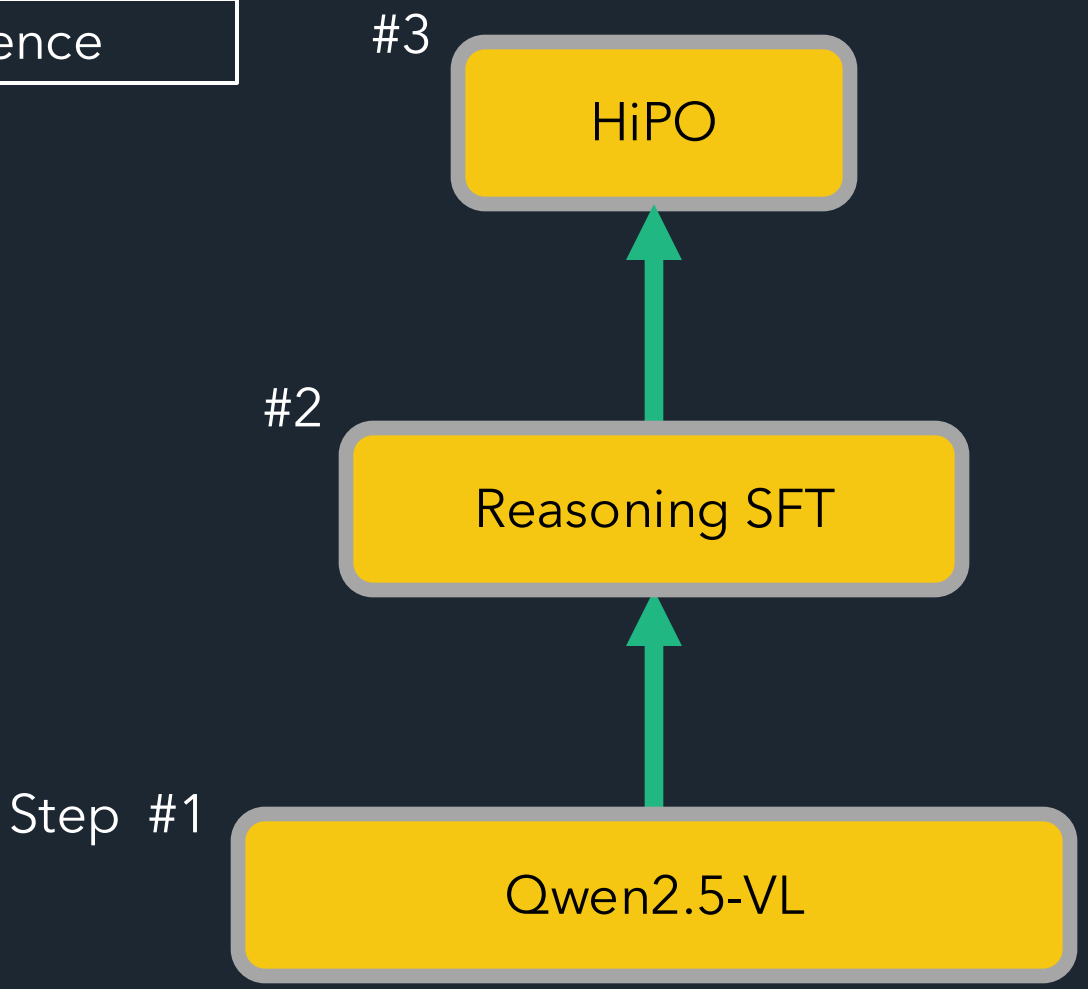


25KM	250KM
35.16%	53.19%

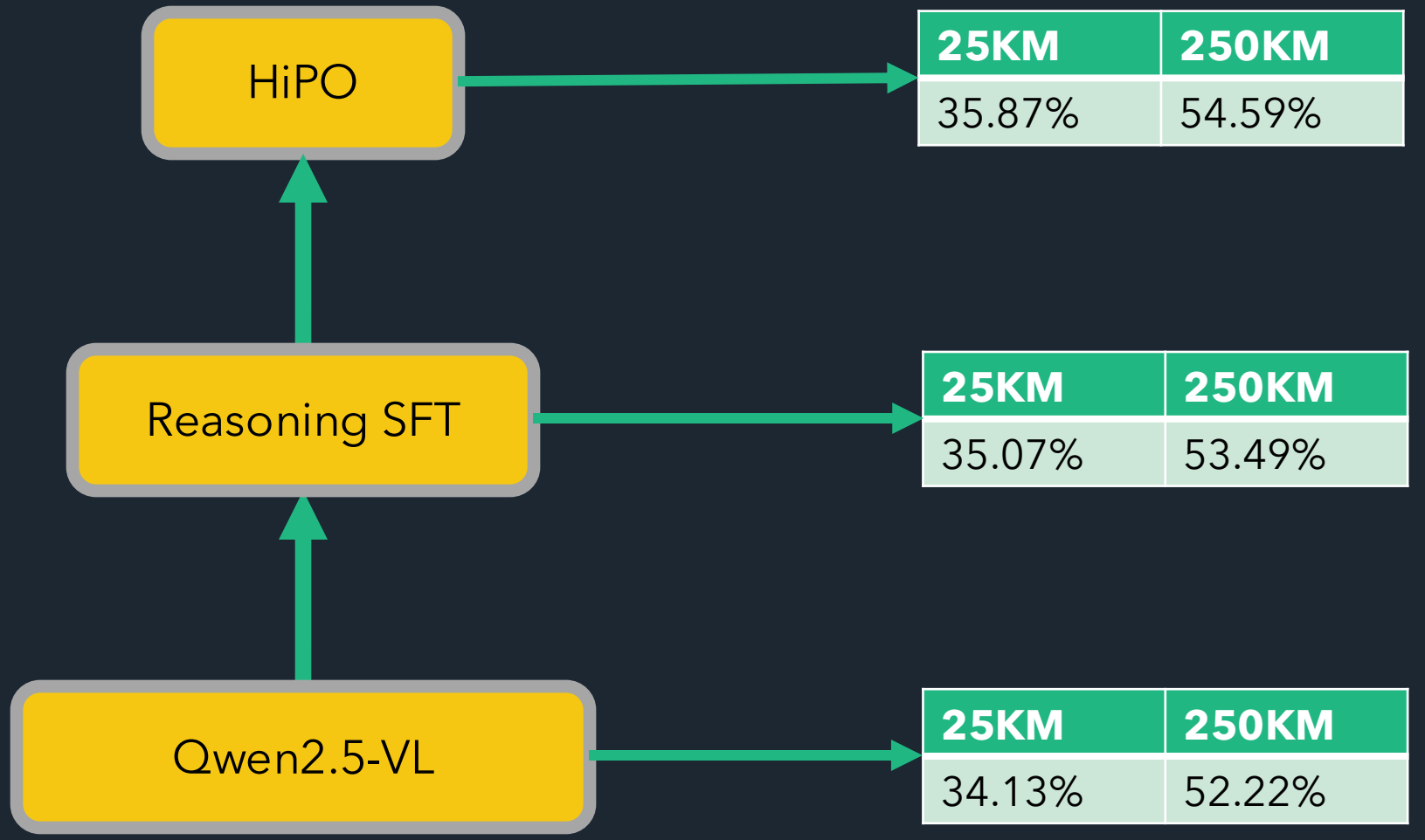
25KM	250KM
33.97%	52.28%

Model Evolution – Final Model

Training Sequence



Model Evolution – Final Model



25KM	250KM
35.87%	54.59%

25KM	250KM
35.07%	53.49%

25KM	250KM
34.13%	52.22%

Thank You!

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Any Questions?



David Rivard

07/28/2025