

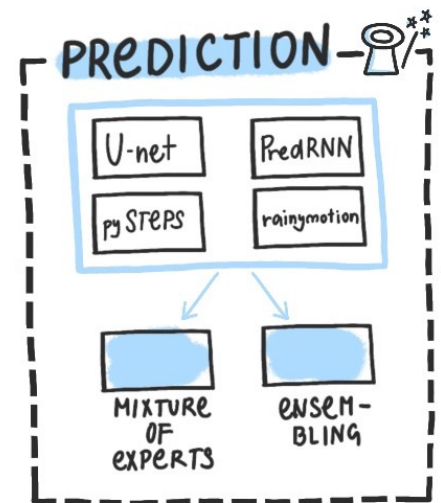
Deep Rain:

Deep learning techniques for rainfall nowcasting

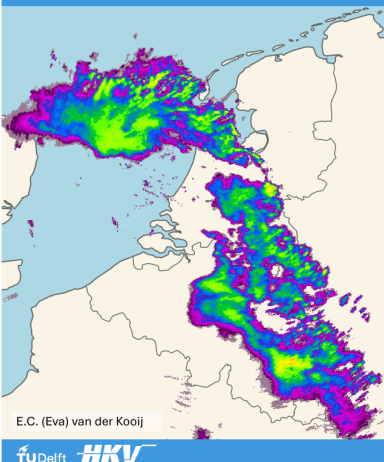
Context: In a world where accurate and timely weather predictions are paramount, AI is slowly revolutionizing the way rainfall forecasts are made. In this MSc thesis, you will contribute to unlocking the full potential of AI in rainfall nowcasting, by exploring one or several of the topics below:

Proposed topics:

1. Can AI accurately predict sudden changes in rainfall movement, structure and intensity?
2. What innovative data sources and features can we incorporate to enhance the accuracy of AI nowcasts?
3. How can we generate realistic ensemble predictions that capture uncertainties effectively?
4. Can small, lightweight AI nowcasting models achieve similar performance to deep neural networks?
5. Is there an advantage in continually retraining the AI to account for non-stationarities in the data?
6. How can we integrate more knowledge about weather and atmospheric dynamics into AI models?



Nowcasting heavy precipitation in the Netherlands: a deep learning approach



Progress to date:

RainGuru (<https://rainguru.tudelft.nl/>) is a recurrent convolutional neural network for short-term rainfall prediction in the Netherlands based on the Traj-GRU architecture by Shi et al. (2017). The model was developed by TU Delft students within the framework of their MSc theses. RainGuRu already outperforms other nowcasting algorithms. Plenty of research has been done on its architecture and loss function. The question is: how can we make it even better?

For more information:

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Deze thesis uitvoeren in samenwerking met HKV Lijn in Water?

Dat kan!

Neem contact op voor de mogelijkheden

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