

# Research Seminar in Data Science

## Review of a scientific presentation

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### Reviewed presentation:

- **Equivariant Neural Networks** by Taco Cohen on the first Deep Learning Nijmegen Metup on the 14th June 2018

## 1 Equivariant Neural Networks

### 1.1 Summary

Taco Cohen: <https://tacocohen.wordpress.com/>  
Summary (as briefly as you can two or three sentences)

### 1.2 Evidence

Harmonic Networks: Deep translation and rotation equivariance Worrall et al. (2017)  
Group equivariant convolutional networks Cohen and Welling (2016)  
Improved Semantic Segmentation for Histopathology using Rotation Equivariant Convolutional Networks Winkens et al. (2018)  
3D G-CNNs for Pulmonary Nodule Detection Winkels and Cohen (2018)  
Evidence (what evidence is offered to support the claims made?)

### 1.3 Strengths

Strengths (what positive basis is there for listening to it?)

### 1.4 Weaknesses

Weaknesses

### 1.5 Evaluation

Evaluation (if you were running the workshop/conference/seminar where the presentation was held, would you recommend inviting the speaker again?)

### 1.6 Comments on the quality of the presentation

Comments on the quality of the presentation

## References

- Cohen, T. and Welling, M. (2016). Group equivariant convolutional networks. In *International Conference on Machine Learning*, pages 2990–2999.
- Winkels, M. and Cohen, T. S. (2018). 3d g-cnns for pulmonary nodule detection. *arXiv preprint arXiv:1804.04656*.
- Winkens, J., Linmans, J., Veeling, B. S., Cohen, T. S., and Welling, M. (2018). Improved semantic segmentation for histopathology using rotation equivariant convolutional networks.
- Worrall, D. E., Garbin, S. J., Turmukhambetov, D., and Brostow, G. J. (2017). Harmonic networks: Deep translation and rotation equivariance. In *Proc. IEEE Conf. on Computer Vision and Pattern Recognition (CVPR)*, volume 2.