

**CRUNCH Seminars at Brown, Division of Applied Mathematics**

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**Automating data augmentation: practice, theory and future direction**

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Deep learning algorithms (e.g., deep neural networks) have performed remarkably well on many different tasks. However, limited data is a recurring problem faced in practice, especially in biomedical image analysis applications due to privacy protection policies. Moreover, lacking data can easily cause over-fitting and poorly generalization performance when training neural networks. To alleviate the aforementioned problem, data augmentation can provide an effective data-space solution for expanding data size, diversity and encoding translational invariance from the root, which can help avoiding overfitting and improving the generalization performance. In the talk, I will give an overview of the state-of-the-art data augmentation techniques, including two different categories (heuristic data augmentation and automated data augmentation).