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## Machine Learning for BCDI

### Thesis

présentée et soutenue publiquement le

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# INTRODUCTION

The present document is a draft of my PhD manuscript.



# **Part I**

## **Deep Learning Theory**





## **Part II**

# **Deep learning for Image Inpainting**



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## INPAINTING

In this chapter the "gap problem" in the BCDI field is introduced as well as the state of the art measures that are taken to tackle it. It follows then a presentation of the various approaches that have been investigated using Deep Learning (DL) to conclude with the optimal one that is also discussed in the scientific paper named *"Patching-based deep learning model for the Inpainting of Bragg Coherent Diffraction patterns affected by detectors' gaps"* (<https://doi.org/10.1107/S1600576724004163>)



## **Part III**

# **Deep learning for Phase Retrieval**



## PHASE RETRIEVAL





# **Annexes**



## APPENDIX