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THESIS

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Theme

The Application of Artificial Intelligence in Resume Screening

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In front of the jury composed of:

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Dedication

I dedicate this thesis to My dear parents, family, and My dear friends for their love, support, and motivation and also to my CTF team **OctaC0re** for the amazing journey we had over the past five years.

by GHENNAI MOHAMMED

Dedication

First of all I would like to thank god for giving me the strength and the will to work and go forward despite everything. Then I thank my beloved parents and brother for motivating me and always believing in me. I also want to personally thank **Dr. Khaldi Belkacem** and **Dr.Belfedhal Alaa Eddine** for setting the example and giving us constant guidance and inspiration. Thanks also to all my friends for every moment we had during this amazing journey, especially my teammates from **OctaC0re**.

by MORDI RIAD ZAKARIA

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Abstract

Feeding new pool resources into any enterprise is critical for its growth strategy. More important, is how it suits current personnel requisites and organizational needs or objectives- which makes recruiting such a vital part of any business expansion plan. Unfortunately, without adequate automation initiatives or software input systems - traditional hiring efforts inherently rely on many people-intensive tasks drawing from probability-based outcomes making them prone to distortions from conscious biases or even human errors.

This barrier underscores the value that Artificial Intelligence (AI) technologies present in automating most human-intensive activities during candidate searches/acquisition moments effectively generating far-reaching gains and saving time while attuning operations towards unaffected efficacy-producing outcomes. In this study, therefore, our objective seeks to explore how we can use AI-derived technologies such as machine learning (ML) & deep learning (DL) algorithms to support efficient bias-free, objective, and effective recruitment in the hiring process.

Towards that goal, we first provide context through an overview of the recruitment process and its attendant challenges. The following comprehensive literature review dwells extensively on extant research already conducted mostly around leveraging AI technologies in recruitment activities. Connecting complementary sub-fields like Natural Language Processing(NLP), and Computer Vision(CV)and providing a comparative analysis of various state-of-the-art resume analysis methodologies and how best to deploy them for optimum results.

Ultimately this thesis demonstrates the potential impact of both ML&DL algorithms deployment in transforming staffing processes from manual tasks to streamlined objectivity improving overall efficiency while maintaining a stronger sense of quality about candidate suitability-for-role determinations- offering valuable insights that prove beneficial for future research as well as development initiatives.

Keywords : Artificial Intelligence, Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, OpenCV, Python, Numpy, Pandas, DistilBert, finetuning

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List of Acronyms

AI	*Artificial Intelligence*
ML	*Machine Learning*
DL	*Deep Learning*
CNN	*Convolutional Neural Network*
R-CNN	*Region-based Convolutional Neural Network*
RNN	*Recurrent Neural Network*
LSTM	*Long Short-Term Memory*
Bi-LSTM	*Bi-directional Long Short Term Memory*
GAN	*Generative Adversarial Network*
DBN	*Deep Belief Network*
ATS	*Applicant Tracking System*
CRM	*Candidate Relationship Management*
OCR	*Optical Character Recognition*
HR	*Human Resources*
CV	*Curriculum Vitae*
CRF	*Conditional Random Field*
PDF	*Portable Document Format*

JPEG	*Joint Photographic Experts Group*
JS	*JavaScript*
KT	*KerasTuner*
TF	*TensorFlow*
NPM	*Node Package Manager*
API	*Application Programming Interface*
HTTP	*HyperText Transfer Protocol*
HTML	*HyperText Markup Language*
PPMI	*Positive Pointwise Mutual Information*