TECHNISCHE UNIVERSITÄT BERLIN

An Empirical Survey of Penguin Migration to Tropical Islands

Bachelor Thesis

Firstname Lastname

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Advisor: Firstname Lastname

Data Engineering for ML (DEEM Lab)

Technische Universität Berlin

Eigenständigkeitserklärung

Hiermit versichere ich, dass ich die vorliegende Arbeit eigenständig ohne Hilfe Dritter und ausschließlich unter Verwendung der aufgeführten Quellen und Hilfsmittel angefertigt habe. Alle Stellen die den benutzten Quellen und Hilfsmitteln unverändert oder sinngemäß entnommen sind, habe ich als solche kenntlich gemacht.

Sofern generische KI-Tools verwendet wurden, habe ich Produktnamen, Hersteller, die jeweils verwendete Softwareversion und die jeweiligen Einsatzzwecke (z.B. sprachliche Überprüfung und Verbesserung der Texte, systematische Recherche) benannt. Ich verantworte die Auswahl, die Übernahme und sämtliche Ergebnisse des von mir verwendeten KI-generierten Outputs vollumfänglich selbst.

Die Satzung zur Sicherung guter wissenschaftlicher Praxis an der TU Berlin vom 8. März 2017. https://www.static.tu.berlin/fileadmin/www/10000060/FSC/Promotion___Habilitation/Dokumente/Grundsaetze_gute_wissenschaftliche_Praxis_2017.pdf habe ich zur Kenntnis genommen. Ich erkläre weiterhin, dass ich die Arbeit in gleicher oder ähnlicher Form noch keiner anderen Prüfungsbehörde vorgelegt habe.

Berlin, 20.10.2025

. . . . . .

(Signature) Name

Abstract

- State the problem
- Say why it's an interesting problem
- Say what your solution achieves
- Say what follows from your solution

Zusammenfassung

This is a placeholder for the german abstract (Kurzfassung) which should follow the same structure as the abstract.

Acknowledgments

Use this section to briefly acknowledge individuals, institutions, and others that supported the work. Delete this section if not applicable.

Contents

Chapter 1

Introduction

This chapter is a placeholder for the introduction of your thesis.

The first paragraph of the introduction should describe the *context*, followed by 1-3 paragraphs stating the *problems* that are solved in this thesis. The next paragraph should mention *existing work* before introducing the *idea* on how to solve the mentioned problems.

Contributions: In the last paragraph list your contributions and outline the thesis as a list of bullet points containing a short introduction into the chapters.

Additional information can be found here: https://mboehm7.github.io/teaching/ws2122_isw/01_Introduction.pdf, slide 21.

This thesis proposes...

Detailed contributions include:

- Integrated GPS tracking and satellite telemetry datasets to map penguin movements beyond traditional polar habitats.
- Conducted a comparative analysis across multiple species (e.g., King, Gentoo, and Little Blue Penguins) to explore differences in tropical dispersal behavior.
- Challenged prevailing assumptions that penguins are strictly cold-adapted species by proposing an ecological framework for thermal adaptability and behavioral plasticity.

Chapter 2

Background

This section is intended to give an introduction about relevant terms and methods used in your work.

Start by outlining the content that will be presented in this chapter, referencing the individual sections.

Section 2.1 introduces... [1, 2].

2.1 Section

Always provide a paragraph outlining the content of the current section.

2.1.1 Subsection

Paragraph

Subparagraph

Chapter 3

Related Work

This chapter provides insights into additional related work that was not mentioned in the background chapter.

Chapter 4

Problem Statement

This chapter elaborates on the problem that this thesis tries to solve.

Chapter 5

Methodology

This chapter explains the individual developed methods used for solving the problem.

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Chapter 6

Experiments

This chapter provides details about the experiments conducted within the context of this thesis.

6.1 Experimental Setup

6.2 Datasets

6.3 Experiment

Figure 6.1 illustrates the Emperor Penguin. See Figure A.1 for additional illustrations.

Figure 6.1: Caption (Figure Captions Must be Bellow the Figure).

6.4 Experiment

Table 6.1 shows descriptive statistics of different penguins.

Table 6.1: Caption. (Table Captions Must be Above the Tables)

Bird	Number of Wings	Location	Height (cm)
Emperor Penguin	2	—	120,7
King Penguin	2	—	150,0
Chinstrap Penguin	2	—	50,7
Little Blue Penguin	2	—	30,0

Chapter 7

Conclusions

This chapter summarizes the contributions of the thesis and provides an outlook into future work:

- Summary
- Conclusions
- Future work

Appendix A

Appendix

A.1 Supplementary Tables

Add supplementary tables if necessary.

Table A.1: Caption. (Table Captions Must be Above the Tables)

Bird	Number of Wings	Location	Height (cm)
Emperor Penguin	2	—	120,7
King Penguin	2	—	150,0
Chinstrap Penguin	2	—	50,7
Little Blue Penguin	2	—	30,0

Add supplementary figures if necessary.

A.2 Supplementary Figures

(a) King Penguin

(b) Little Blue Penguin

Figure A.1: Penguins.

Bibliography

[1] Stefan Grafberger, Paul Groth, and Sebastian Schelter. mlidea: Interactively improving ml data preparation code via "shadow pipelines". *Proc. VLDB Endow.*, 18(12):5359–5362, 2025.

[2] Olga Ovcharenko and Sebastian Schelter. Towards cross-modal error detection with tables and images. *DataWorld Workshop at ICML*, 2025.