FEDERAL UNIVERSITY OF GOIAS
INSTITUTE OF COMPUTER SCIENCE
POSTGRADUATE PROGRAM IN COMPUTER SCIENCE

GENERAL INFORMATION	
TITLE	Applications of computer vision and machine learning techniques in Brazilian biomes: A systematic literature review.
PARTICIPANTS	Student: Emilia Alves Nogueira; Supervisor: Dr. Fabrízzio Soares; Co-supervisor: Christian Cabacinha
DESCRIPTION	The Systematic Review (SR) will be extremely important to have well-prepared, systematic and auditable documentation on the state of the art of Brazilian ecosystems and the computational techniques involved.
GENERAL OBJECTIVES	Identify and analyze existing remote sensing and computer vision methods and techniques applied to Brazilian ecosystems.

RESEARCH QUESTIONS	**JUSTIFICATION**
How have computational techniques been applied to the conservation and remote sensing of Brazilian biomes?	This question is extremely important for analyzing the computational techniques used in Brazilian ecosystems.

IDENTIFICATION OF STUDIES	
SEARCH STRATEGY	Use search sources, with different strings and refine the string with the pilot search.
LIST OF SEARCH SOURCES	ACM; Engineering Village; IEEE; Science direct; Web ofScience and Scopus.
REASONS FOR CHOOSING FROM SEARCH SOURCES	These sources were chosen because they are well-known and widely used in our field.
KEYWORDS AND SYNONYMS	Computer vision Digital image processingMachine learning Deep learning Remote sensing Brazilian ecosystem Brazilian biomes Biomes in Brazil
PILOT SEARCH DATA TO DEFINE SEARCH STRING	("Brazilian ecosystem" OR "Brazilian biomes" OR "Biomes inBrazil")AND("digital image processing" OR "computer vision" OR "deep learning" OR "machine learning" OR "Satellite imagery" OR "remote sensing")
FINAL SEARCH STRING	(("global conservation" OR "global warming" OR "climate change") AND ("ecology" OR "biodiversity" OR "ecosystem"OR "biomes") AND ("Brazilian" OR "Brazil")) AND ("ecological informatics" OR "digital image

	processing" OR "computer vision" OR "deep learning" OR"machine learning" OR "satellite imagery" OR "remote sensing") AND "tropics"

SELECTION AND EVALUATION OF STUDIES	
CRITERIA FOR INCLUSION AND EXCLUSION OF STUDY	CI 1: Works that are about conservation, global warming or remote sensing, but that use some computational technique (spreadsheets will not be considered). CE 1: Works that are about Brazilian biomes, but are not focused on conservation, global warmingor remote sensing; CE 2: Works that are about conservation, global warming or remote sensing, but that do not useany computational techniques; CE 3: Works that are not about Brazilian biomes; CE 4: Works other than: primary studies, conference papers or articles; CE 5: Works prior to 2010; CE 6:Language is not English. CE 7: Works not freely available.
QUALITY ASSESSMENT OF THE STUDIES	CQ 1: Definition of the problem studied; CQ 2: Description of the environment in which the study is carried out; CQ 3: Study limitations; CQ 4: Description of computational techniques applied toecology; CQ 5: Empirical investigation of the results achieved in environmental conservation or global warming, usingcomputational techniques.

DISTRIBUTION OF SELECTED STUDIES.	
BY INCLUSION CRITERIA	82 articles were included by CI 1
BY EXCLUSION CRITERIA	30 articles were excluded by CE 1 – CE 7
DUPLICATES	10 articles are duplicated