

# Two Decade Research Trend in Artificial Intelligence of Climate Change: A Bibliometric Analysis

**Fairuz Iqbal Maulana**

Computer Science Department, School of Computer Science,  
Bina Nusantara University  
Jakarta 11480, Indonesia  
fairuz.maulana@binus.edu

**Donna Carollina**

Visual Communication Design Department, School of Design  
Bina Nusantara University  
Jakarta 11480, Indonesia  
donna.carollina@binus.edu

**Raden Aditya Kristamtomo Putra and Mardhatillah Shanti**

Entrepreneurship Department, BINUS Business School Undergraduate Program  
Bina Nusantara University  
Jakarta 11480, Indonesia  
aditya.putra@binus.edu, mardhatillah.shanti@binus.edu

## Abstract

Climate change and population growth trigger digital transformation challenges in various fields. Artificial Intelligence (AI) is considered a key element to answer the current challenges facing these multiple fields related to climate change. We present a bibliometric analysis to answer how the academic publication of artificial intelligence in various areas to systematically understand research trends on this topic. We used Scopus indexed references, bibliometric methodologies, and software to conduct the research. We retrieved 1264 published documents from the Scopus database over two decades from 2002 to 2021. Analysis was also performed by visualizing the bibliometric network using Vosviewer. The method used consists of five stages: determination of search keywords, initial search results, refinement of search results, initial compilation, and data analysis. Among the most published articles indexed by Scopus, papers published by researchers in the United States (US) have the highest number of publications with 296 scientific publications, then the second country is China with 136 academic documents, and the United Kingdom is in third place with 136 academic documents. Computer Science is the subject with the highest number of documents with 441 documents (18.3%). The processed data shows the patterns and trends of Scopus indexed international publications.

## Keywords

Bibliometric, artificial intelligence, sustainability, climate change, research trend, scientometric

## Biographies

**Fairuz Iqbal Maulana** Fairuz Iqbal Maulana, S.T., M.Eng., M.T. is a lecturer at the College of Computer Science, Bina Nusantara University, Indonesia. He earned two Master's degrees, the first in the field of Interdisciplinary Program of Information System, Pukyong National University (PKNU), Busan - South Korea, and the second in the School of Electrical Engineering and Informatics (STEI), Bandung Institute of Technology (ITB), Indonesia with specializes in Multimedia and Games. His research fields are Game programming, Computer Vision, Facial Recognition, Augmented Reality, Virtual Reality for education, Internet of Things. He is the head of the Digital Technopreneur Laboratory in Malang campus. He can be contacted by email: fairuz.maulana@binus.edu

**Donna Carollina** are researchers and teaching staff of the Department Visual Communication Design (Malang City Campus), Indonesia. He obtained his bachelor's degree from the Indonesian School of Visual Arts and Design in 2013; and Masters in 2017 from the Indonesian Institute of the Arts Yogyakarta, Indonesia.

**Raden Aditya Kristamtomo Putra** is a researcher and teaching staff of the Department of Entrepreneurship, Undergraduate Program at the BINUS Business School, Bina Nusantara University, Malang Campus, Malang, Indonesia. Obtained a bachelor's degree from the Bandung Institute of Science Technology, Indonesia; and Master from Padjadjaran University, Indonesia; and a doctorate degree from the Indonesian Education University, Indonesia.

**Mardhatillah Shanti** is a researcher and faculty member of the Entrepreneurship Department, BINUS Business School Undergraduate Program at the Bina Nusantara University, Malang Campus, Malang, Indonesia. He earned a Bachelor of Economic from Brawijaya University, Indonesia.