


Chapter 6

Building Intelligent Systems With Python: An AI and ML Journey for Social Good

Anurag Palakurti

 <https://orcid.org/0009-0000-8068-6820>

Pennsylvania State University, USA

Divya Kodi

 <https://orcid.org/0009-0003-3421-4170>

Cyber Security Senior Data Analyst Truist Financial, USA

ABSTRACT

This Chapter explores the transformative potential of Python in developing intelligent systems that drive positive social change. This book delves into the applications of artificial intelligence (AI) and machine learning (ML) to solve pressing global challenges, with a focus on sustainability, social equity, and accessibility. Through practical examples and hands-on techniques, it provides readers with the tools to harness Python's capabilities to build systems that address issues such as poverty, healthcare disparities, climate change, and more. By leveraging the power of AI and ML, the book demonstrates how technology can be used not only to innovate but also to promote fairness and equality, creating a more inclusive and sustainable future.

This Chapter explores the transformative potential of Python in developing intelligent systems that drive positive social change. This book delves into the applications of artificial intelligence (AI) and machine learning (ML) to solve pressing global challenges, with a focus on sustainability, social equity, and accessibility. Through practical examples and hands-on techniques, it provides readers with the tools to harness Python's capabilities to build systems that address issues such as poverty, healthcare disparities, climate change, and more. By leveraging the power of AI and ML, the book demonstrates how technology can be used not only to innovate but also to promote fairness and equality, creating a more inclusive and sustainable future.

DOI: 10.4018/979-8-3693-9471-7.ch006

INTRODUCTION TO INTELLIGENT SYSTEMS FOR SOCIAL GOOD

Intelligent systems, powered by Artificial Intelligence (AI) and Machine Learning (ML), have the potential to revolutionize how we address some of the most pressing global challenges. These systems can analyze vast amounts of data, recognize patterns, and make decisions that can drive social change, improve sustainability, and promote equity. From addressing climate change to improving healthcare access, AI and ML can be leveraged to solve problems that have long been difficult to tackle through traditional methods. This chapter explores how intelligent systems are being applied to create a positive social impact, with a particular focus on their ability to promote social good by making processes more efficient, equitable, and accessible. By harnessing these technologies, society can build more inclusive, sustainable, and resilient systems that benefit everyone, especially marginalized communities.

THE ROLE OF AI AND ML IN ADDRESSING GLOBAL CHALLENGES

AI and ML are increasingly being recognized as critical tools in the fight against global challenges such as poverty, inequality, climate change, and public health crises. These technologies allow for the analysis of complex data sets, enabling organizations to predict trends, optimize resources, and develop targeted interventions. For instance, AI can be used to predict environmental patterns, helping to mitigate the impacts of natural disasters, or to improve healthcare delivery by identifying at-risk populations and optimizing treatment plans. Additionally, ML algorithms can help policymakers and NGOs design more effective programs for poverty alleviation, education, and disaster relief by providing insights that were previously inaccessible through conventional methods. By using AI and ML to tackle these challenges, we can make more informed decisions, accelerate innovation, and create scalable solutions that have the potential to positively impact millions of lives.

ETHICAL CONSIDERATIONS IN BUILDING INTELLIGENT SYSTEMS

While the potential benefits of AI and ML for social good are immense, their implementation must be approached with caution, ensuring that ethical principles are at the forefront of development. One of the primary concerns is the risk of bias in AI models, which can perpetuate inequalities and harm marginalized communities. For example, biased algorithms used in hiring, lending, or law enforcement can exacerbate existing social disparities. To mitigate these risks, it is essential to prioritize fairness, transparency, and accountability in the design and deployment of AI systems. Ethical AI frameworks must be established to guide developers in creating systems that are not only effective but also just and inclusive. Furthermore, the use of AI in sensitive areas such as healthcare and criminal justice requires careful consideration of privacy and data security. Building trust in intelligent systems involves ensuring that they are transparent, explainable, and that their decisions are made with the well-being of all stakeholders in mind. By addressing these ethical considerations, we can create AI and ML systems that contribute to social good while minimizing harm and ensuring that the benefits of these technologies are equitably distributed.

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/building-intelligent-systems-with-python/370242

Related Content

Art Empowering At-Risk and Opportunity Youth: A Case Study of artworxLA

Denise A. Gray (2017). *Handbook of Research on the Facilitation of Civic Engagement through Community Art* (pp. 320-338).

www.irma-international.org/chapter/art-empowering-at-risk-and-opportunity-youth/172989

What the Future America Will Look Like: Interracial Dating and Marriages

Hok Yung Mary Yeung (2021). *Research Anthology on Empowering Marginalized Communities and Mitigating Racism and Discrimination* (pp. 99-117).

www.irma-international.org/chapter/what-the-future-america-will-look-like/277560

Family-Community-Higher Education Partnership: A Critical Pillar in Realizing Social Justice

Benard O. Nyatuka (2020). *Handbook of Research on Diversity and Social Justice in Higher Education* (pp. 129-148).

www.irma-international.org/chapter/family-community-higher-education-partnership/253796

Respect for Human Rights as a Predictor of Arab Spring Intensity: A Replication and Extension Study

Matthew D. Hudson-Flege (2019). *International Journal of Political Activism and Engagement* (pp. 1-13).

www.irma-international.org/article/respect-for-human-rights-as-a-predictor-of-arab-spring-intensity/235390

Health Institution Governance: An Imperative to Enhance Public Health Services

Neeta Baporikar (2021). *International Journal of Political Activism and Engagement* (pp. 1-19).

www.irma-international.org/article/health-institution-governance/298599