



DGITechChronicle



DGI TECH CHRONICLE

C

SE (AI & ML)

EDITION

Vol III Issue I (Jul-Dec 2022)





DGITechChronicle

EDITORIAL MESSAGE



Dr. Bipin Pandey
(HOD CSE)

Dear Readers,

Welcome to the latest edition of DGI Tech Chronicle. It gives me immense pleasure to present this issue, a culmination of diligent efforts from our talented contributors, showcasing the innovative spirit and technical prowess of our college community.

In these pages, you'll find a diverse array of articles, research findings, and insights that reflect the ever-evolving landscape of technology. As an engineering college community, we stand at the forefront of technological breakthroughs, and it is our mission to empower youths with the knowledge and insights to not only keep pace but to lead in this ever-accelerating race of innovation.

As we continue to push the boundaries of innovation, I extend my gratitude to everyone involved in bringing this publication to life – the writers, editors, designers, and all contributors who have made this edition a reality.

Each piece of writing embodies the spirit of exploration & advancement that defines the creativity of budding technocrats of our institution.

As readers, you play an integral role in this journey. Your curiosity & engagement drive us to explore deeper, question further, and innovate beyond boundaries. We hope this edition complement with your interest, sparks new ideas, and fosters a deeper appreciation for the transformative power of technology.

Warm regards,
Dr. Bipin Pandey
Editor-in-Chief, DGI Tech Chronicle

EDITORIAL BOARD



Dr. Bipin Pandey
(HOD CSE)

Editor in Chief

In this issue, we delve into a captivating array of topics and developments, all tailored to the inquisitive minds of the future engineers. As an engineering college community, we stand at the forefront of technological breakthroughs, and it is our mission to empower you with the knowledge and insights to not only keep pace but to lead in this ever-accelerating race of innovation.



Smita Singh
(13106; CSE)

Editor- Design



Lovekesh Kumar
(13054; CSE)

Co- Editor



Abhishek Singh
(13006; CSE)

Editor- Text



DGITechChronicle



**Department Vision
and Mission**

**Department PEO, PSO
and PO's**

**My Pen and Me:
Students Articles**

Department Achievers

TABLE OF CONTENT

VISION

To facilitate high quality education in Information Technology and progressive atmosphere to the students so that they can fit into the competitive atmosphere in the global market.

To provide a learning ambience to enhance innovations, problem solving skills, managerial qualities, team-spirit and ethical responsibilities.

To provide exposure to latest tools and technologies in the area of Information Technology.

To support society by participating in & encouraging technology transfer.

To undertake collaborative learning which offers opportunities for long term interaction with academia and industry.

MISSION

Program Educational Objectives (PEO)

Engineers will practice the profession of engineering using a systems perspective and analyze, design, develop, optimize & implement engineering solutions and work productively as engineers, including supportive and leadership roles on multidisciplinary teams.

Continue their education in leading graduate programs in engineering & interdisciplinary areas to emerge as researchers, experts, educators & entrepreneurs and recognize the need for, and an ability to engage in continuing professional development and life-long learning.

Engineers, guided by the principles of sustainable development and global interconnectedness, will understand how engineering projects affect society and the environment.

Promote Design, Research, and implementation of products and services in the field of Engineering through Strong Communication and Entrepreneurial Skills.

Re-learn and innovate in ever-changing global economic and technological environments of the 21st century.

Programme Outcome (POs)

Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

Problem analysis: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

Conduct investigations of complex problems: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

Modern tool usage: Create, select, and apply appropriate techniques, resources, & modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

Programme Outcome (POs)

The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

Environment and sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

Project management and finance: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Bridging the Gap: Translation of English Words from German-English Bilingual Text for Natural Language Processing



Peehu Singh

(15008; CSE)

In the realm of Natural Language Processing (NLP), the translation of words from a German-English bilingual text poses a unique set of challenges and opportunities. As the demand for effective communication between different linguistic communities continues to grow, the development of robust translation models becomes paramount.

The complexity lies in the inherent differences between the German and English languages, not only in terms of vocabulary but also in sentence structure and grammatical nuances. German, known for its compound words and intricate grammatical rules, requires a nuanced approach to accurately convey meaning in English. Natural Language Processing algorithms play a pivotal role in deciphering and translating these linguistic intricacies.

The translation process involves mapping German words to their corresponding English counterparts, often requiring an understanding of context and cultural nuances. State-of-the-art machine learning models, such as neural machine translation (NMT) systems, leverage vast bilingual datasets to enhance their translation capabilities. These models employ sophisticated algorithms that learn patterns and relationships between words, enabling them to generate contextually relevant translations.

To achieve accurate translations, researchers focus on fine-tuning models to capture the idiosyncrasies of both languages. Additionally, incorporating contextual information and considering the broader linguistic context helps address ambiguities and enhances translation accuracy.



In conclusion, the translation of English words from a German-English bilingual text for NLP represents a significant stride in breaking down language barriers. As technology continues to advance, refining these translation models becomes crucial for fostering effective cross-cultural communication. The intersection of language and technology holds promise for a future where seamless language translation enhances global connectivity and understanding.



The Evolution of Programming Languages: Python to Rust

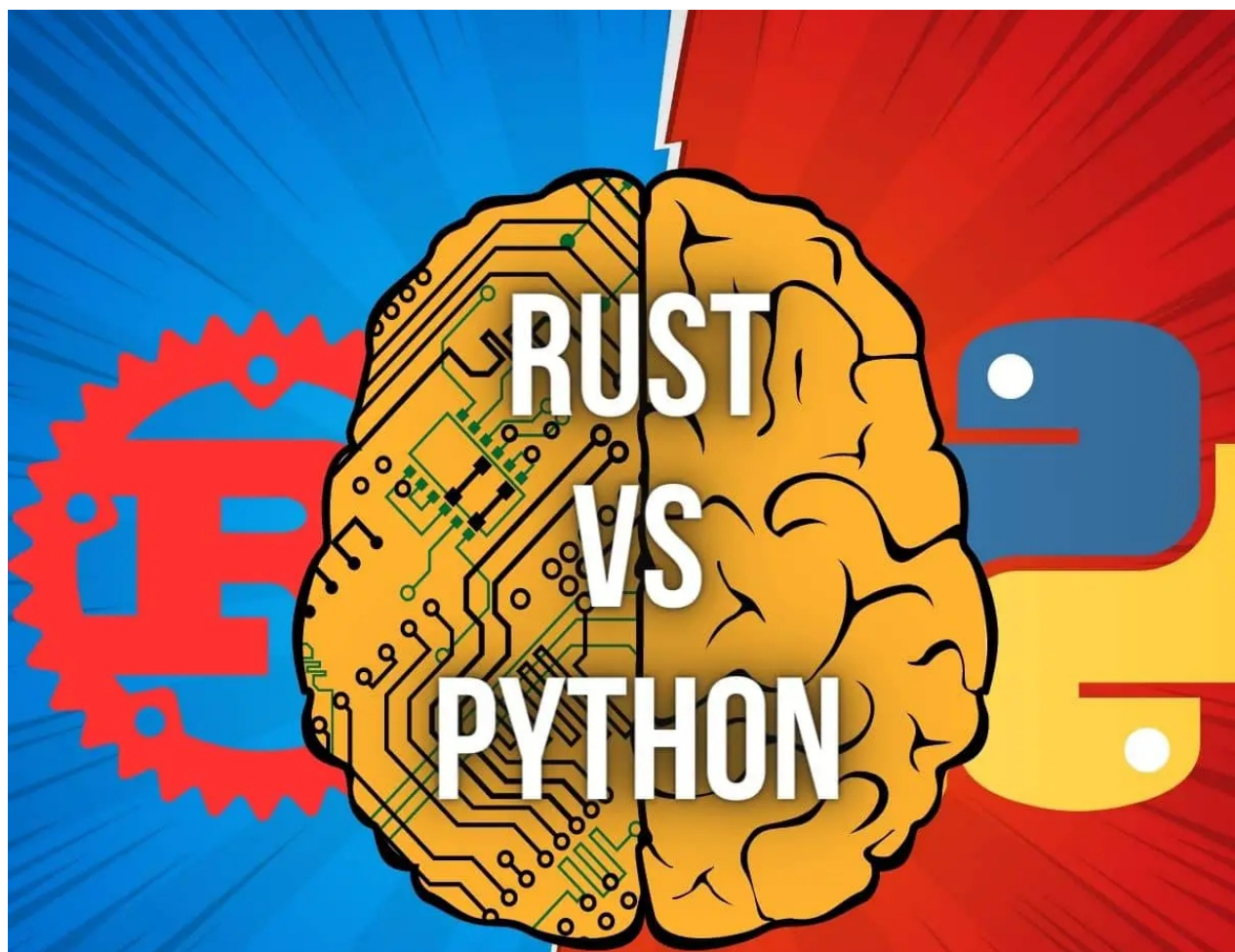


Varun Sharma

(15146; CSE)

Programming languages have played a pivotal role in shaping the digital landscape, with each era introducing innovations to enhance efficiency, readability, and performance. From the simplicity of Python to the robustness of Rust, the evolution of programming languages reflects the industry's relentless pursuit of improvement.

Python, renowned for its readability and versatility, emerged as a user-friendly language that attracted both beginners and seasoned developers. Its emphasis on code readability and simplicity propelled Python to prominence in web development, data science, and artificial intelligence. With an extensive library ecosystem and a vibrant community, Python remains a go-to choice for many programmers.



On the other end of the spectrum, Rust represents a new frontier in system-level programming. Launched by Mozilla, Rust prioritizes performance, memory safety, and concurrency without sacrificing developer productivity. Its unique ownership system prevents memory-related bugs, making it a robust choice for projects where security and performance are critical, such as operating systems and game engines.

The evolution from Python to Rust signifies the industry's shift towards languages that cater to diverse needs. Python's ease of use and readability make it an excellent choice for rapid development and prototyping, while Rust's focus on performance and safety addresses the demands of low-level system programming.

Rust vs Python

Rust	Python
1. Statically typed language	1. Dynamically typed language
2. Emphasizes memory safety and performance	2. Emphasizes ease of use and readability
3. Has a strong type system and powerful ownership model	3. Has a weaker type system and no ownership model
4. Supports both functional and imperative programming paradigms	4. Primarily supports imperative programming, with some functional features

www.freshersnow.com

As technology advances, the programming landscape continues to evolve. While Python and Rust occupy different niches, their coexistence demonstrates the industry's recognition of diverse requirements. Whether one prioritizes simplicity and community support or demands high-performance and safety, the ever-expanding array of programming languages ensures that developers can choose the right tool for the job. The journey from Python to Rust is not just a chronological progression but a testament to the rich tapestry of choices available in the dynamic world of programming.

Navigating Software Development: Agile vs. Waterfall Approach

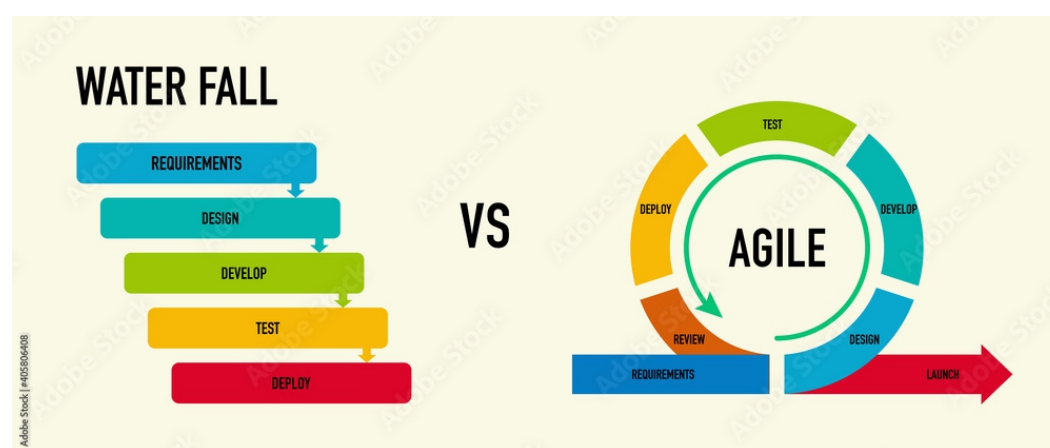


Prerna Kumari
(14080; CSE)

In the dynamic landscape of software development, choosing the right methodology is crucial for project success. Two prominent approaches, Agile and Waterfall, stand at opposite ends of the spectrum, each with its own set of advantages and drawbacks.

The Waterfall approach is a traditional, linear model where development progresses through a sequence of clearly defined phases – requirements, design, implementation, testing, deployment, and maintenance. This method provides a structured and comprehensive plan upfront, ensuring a clear roadmap for the entire project. However, its rigidity can be a hindrance when changes are required mid-project, making it less adaptable to evolving client needs.

In contrast, Agile methodology embraces flexibility and collaboration. It breaks the project into small, manageable iterations known as sprints, allowing for continuous development and frequent reassessment of priorities. Agile promotes customer involvement throughout the process, ensuring that the end product aligns closely with user expectations. While its adaptive nature makes it well-suited for projects with evolving requirements, it can be challenging to manage in larger projects without a disciplined approach.



The choice between Agile and Waterfall often depends on the nature of the project and client requirements. Agile is ideal for dynamic environments where change is inevitable, fostering quick responses to evolving needs. Conversely, the Waterfall model suits projects with well-defined, stable requirements, providing a structured framework that ensures a step-by-step progression.

Enhancing Security: The Rise of Biometric Authentication Systems



Pragma Dhimri
(15108; CSE)

In a world where digital transactions and data protection are paramount, the demand for robust and secure authentication systems has never been higher. Enter biometric authentication, a cutting-edge technology that leverages unique physiological and behavioral characteristics for identity verification. From fingerprints and facial recognition to iris scans and voice patterns, biometrics is reshaping the landscape of security.

The Biometric Advantage

Unlike traditional methods such as passwords or PINs, biometric authentication offers a more secure and user-friendly approach. Each individual possesses unique biological traits that are difficult to replicate, providing an extra layer of security against unauthorized access. Biometric systems not only enhance security but also eliminate the need for users to remember complex passwords, mitigating the risks associated with forgotten or easily hackable credentials.



- 1. Fingerprint Recognition:** Fingerprint scanners have become a ubiquitous feature on smart phones and other devices. The distinctive ridges and valleys of a person's fingerprint serve as a personalized key, granting access only to the rightful owner.
- 2. Facial Recognition:** The rise of facial recognition technology allows devices and systems to analyze facial features, mapping unique characteristics for identification. This technology finds applications in smartphones, airports, and even social media platforms.
- 3. Iris and Retina Scans:** Iris and retina scans delve into the intricate details of the eye to create a unique biometric profile. These scans are highly accurate and are commonly employed in high-security environments.
- 4. Voice Authentication:** Voice recognition technology analyzes vocal patterns, emphasizing the uniqueness of an individual's voice. This method is employed in phone-based authentication systems and voice-activated devices.



Applications Across Industries : Biometric authentication systems are not confined to the realm of personal devices. They are increasingly prevalent across industries, from financial institutions securing online transactions to healthcare facilities protecting patient records. Governments also employ biometrics for border control and citizen identification.

Challenges and Continuous Advancements: Despite their efficacy, biometric systems are not without challenges. Privacy concerns, potential vulnerabilities, and the need for stringent data protection measures must be addressed. Ongoing research focuses on improving biometric algorithms, enhancing accuracy, and developing liveness detection to prevent spoofing attempts.

Department Achievers

DRONACHARYA
Group of Institutions

E&ICT Academy
IIT Guwahati

CONGRATULATIONS!
for being selected in

Research Internship at E&ICT Academy, IIT Guwahati

Ayushya Verma
Roll No : 14026 (CSE)
Final Year Student

Indian Institute of Technology Guwahati
Department of Electronics & Electrical Engineering

Date: 22/04/2021

To:
Training and Placement Department,
Dronacharya Group of Institutions,
Goswami Noida - 201306

Subject: Confirmation of the Research Internship of Mr. Ayushya Verma at E&ICT Academy, IIT Guwahati from February - April 2021

Dear Sir,

As per the email sent by the Head, Department of Computer Science and Engineering, Dronacharya Group of Institutions on 19 January 2021, Mr. Ayushya Verma, Roll No 14026, B.Tech. final year student of CSE Dept. of Dronacharya Group of Institutions, has been selected as a Research Intern at the E&ICT Academy, Indian Institute of Technology Guwahati for a period of three months, i.e. February to April 2021. During his internship, Mr. Ayushya will be working on the realization of artificial intelligence and machine learning algorithms. Hope this research internship would enable Mr. Ayushya to do significant work at IIT Guwahati, leading to publish a research article in a peer reviewed journal or a conference. If you need further information in this regard, please let us know.

Dr. Gagan Tripathi,
Associate Professor,
Department of Electronics and Electrical Engineering,
IIT Guwahati, Guwahati, Assam, Pin 781039
Email: gagan@iitg.ac.in
Phone: +91-961-258-2136, +91-981-100793 (Off)

Student Internship in IIT Guwahati

DRONACHARYA
Group of Institutions

CONGRATULATIONS!
for being selected as

Campus Ambassador Intern

International Model United Nations

KRITIKA SAXENA
FINAL YEAR STUDENT

INTERNATIONAL MODEL UNITED NATIONS

Certificate of Internship
This Certificate Recognizes with Appreciation

KRITIKA SAXENA
As a Campus Ambassador Intern for
INTERNATIONAL MODEL UNITED NATIONS
from April 30th, 2021 - June 4th, 2021

Mohamed Bhanuaj
Mohammed Bhanuaj
Executive Chairman

Campus Ambassador Intern