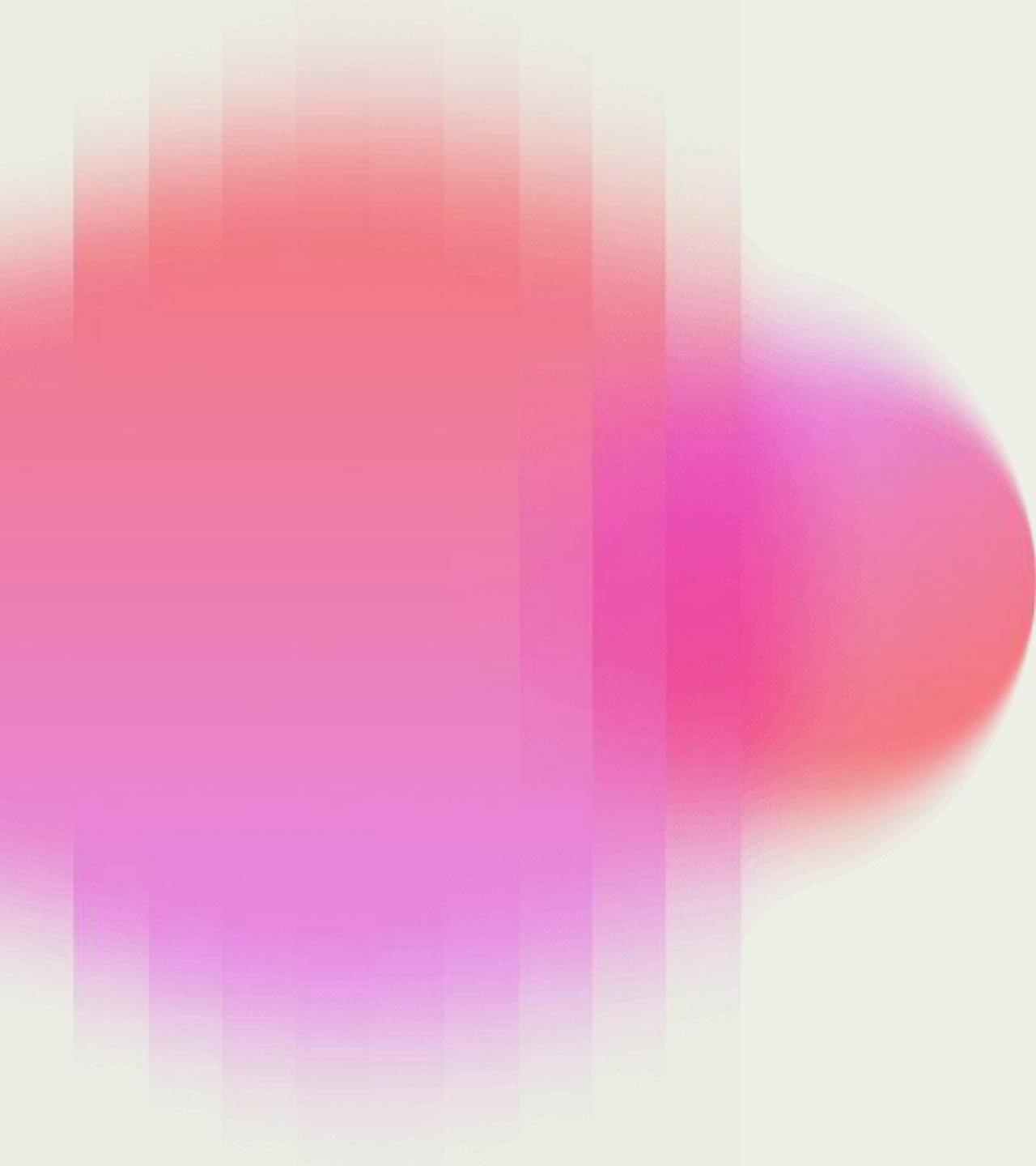


Automation vs AI: Strategic Priorities for Statistical Programmers

Avinash R Pati
Francis Kendall
Microsoft Co-pilot

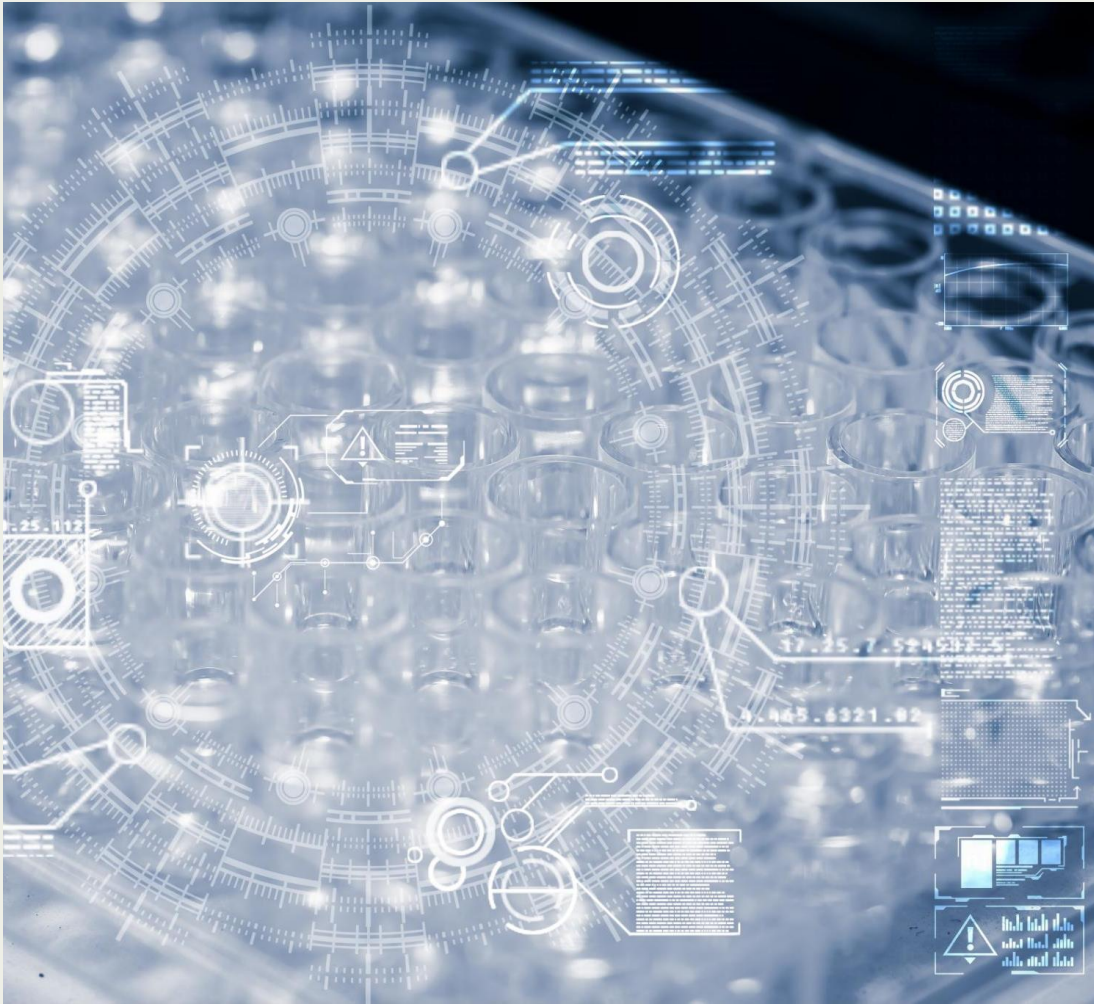


Presentation Agenda Overview

- Debate Overview: Automation vs AI in Statistical Programming
- The Case for Automation
- The Case for AI Adoption
- Comparative Analysis: Strategic Priorities and Risks
- Practical Implications for Statistical Programmers

Debate Overview: Automation vs AI in Statistical Programming





Framing the Debate: Automation or AI as the Primary Focus

Automation as Immediate Priority

Automation streamlines workflows, reduces human error, and frees time for advanced analytical tasks.

Foundation for AI Integration

Robust automation creates consistency and scalability necessary for future AI adoption in programming.



Contrasting Perspectives: Immediate Automation vs Early AI Adoption

Urgency of AI Investment

Immediate investment in AI-driven tools is critical to stay competitive in statistical programming and clinical research.

Risk of Delayed Adoption

Delaying AI adoption risks falling behind as industries shift toward intelligent, adaptive analytics and decision support.

Transformative Potential

AI-powered analytics can transform clinical research and regulatory submissions through adaptive algorithms and intelligent data analysis.

The Case for Automation





Efficiency, Standardization, and Error Reduction through Automation

Automation Enhances Efficiency

Automating repetitive tasks significantly shortens completion time, freeing up resources for complex analyses.

Standardization of Processes

Automation ensures consistent and standardized processes, improving reproducibility across projects.

Error Reduction Benefits

By minimizing human intervention, automation reduces errors and enhances compliance with regulatory standards.



Automation as a Foundation for Future AI Integration

Automation as Foundational Layer

Automation establishes structured and reliable systems essential for seamless AI integration and technological advancement.

Clean Data and Documented Processes

Well-automated workflows ensure clean data and well-documented processes, which are critical for successful AI adoption.

Strategic Investment for Innovation

Investing in automation today lays the groundwork for future innovations and prevents inefficiencies in AI implementation.

The Case for AI Adoption



Transformative Potential of AI in Statistical Programming

Handling Complex Data

AI tools process complex and unstructured data that traditional methods cannot easily manage.

Pattern Identification

AI identifies hidden data patterns beyond human capability using advanced algorithms.

Automation of Advanced Tasks

AI automates higher-order statistical programming functions including data cleaning and anomaly detection.



Industry Shifts and the Imperative for Early AI Investment

Paradigm Shift in Industry

The industry is on the verge of a major transformation driven by intelligent analytics and AI systems adoption.

Regulatory and Research Embrace

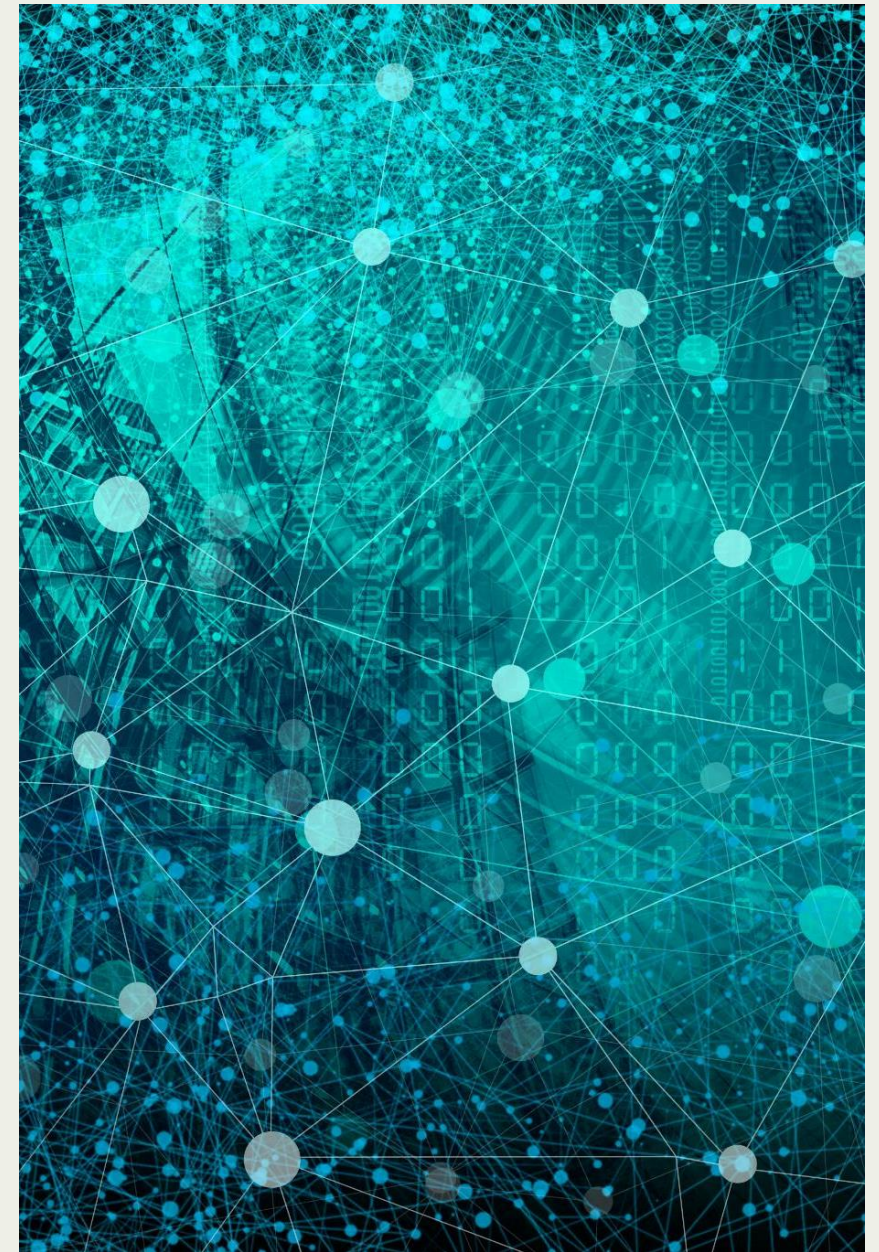
Regulatory bodies and research institutions are increasingly adopting AI-driven decision-support and analytics technologies.

Accelerated Clinical Trials

Adaptive AI algorithms speed up clinical trial processes and improve data interpretation accuracy.

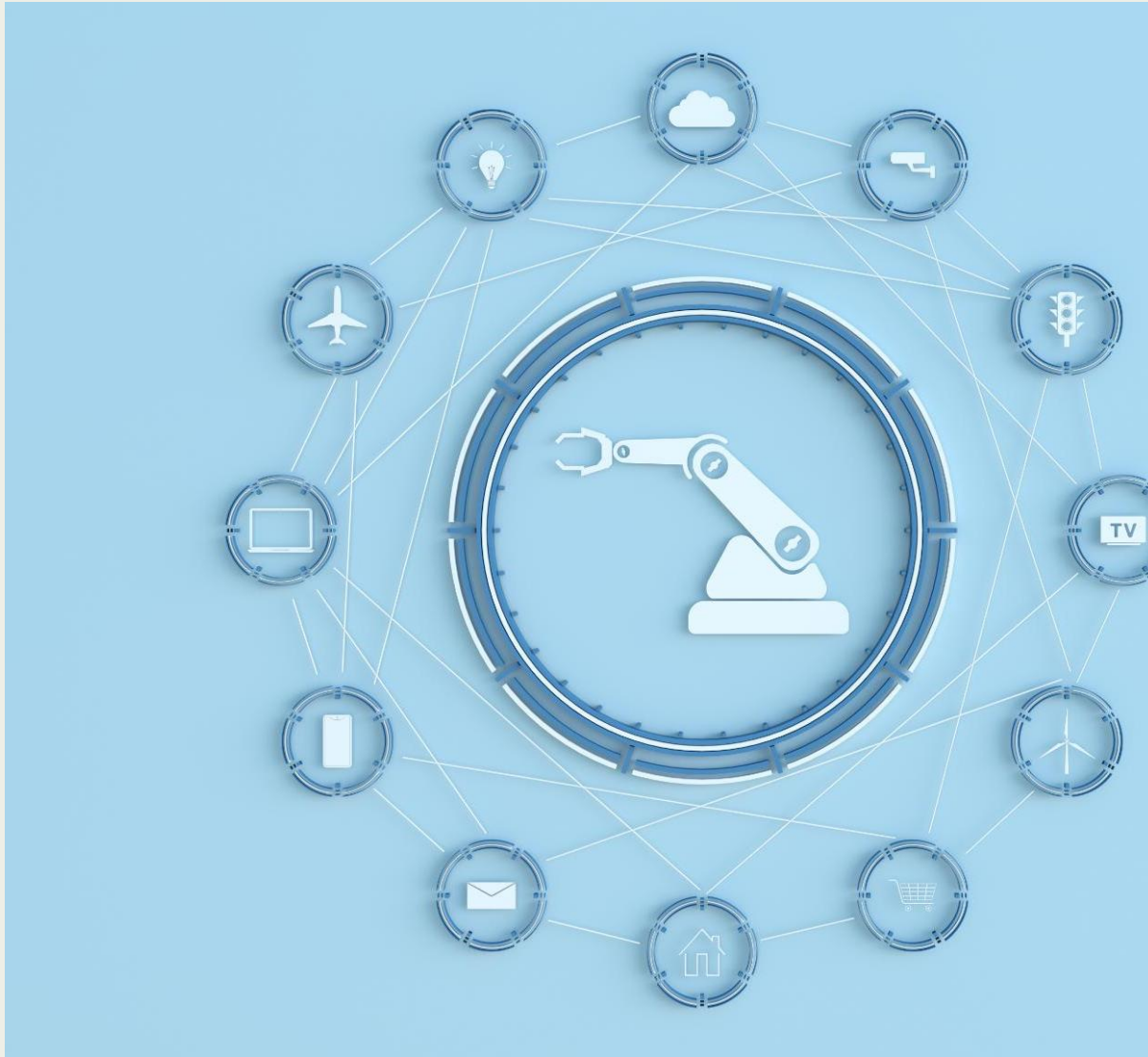
Strategic Investment Benefits

Early AI investment positions statistical programmers to lead innovation and maintain competitiveness.





Comparative Analysis: Strategic Priorities and Risks



Strategic Context and Immediate Returns of Automation

Strategic Evaluation

Assessing strategic context is vital to prioritize automation versus AI based on risks and opportunities.

Immediate ROI Benefits

Automation provides quick returns by optimizing current processes and improving efficiency.

Lower Risk Profile

Automation risks are lower due to reliance on established technologies and best practices.



Challenges and Rewards of AI Adoption

Implementation Challenges

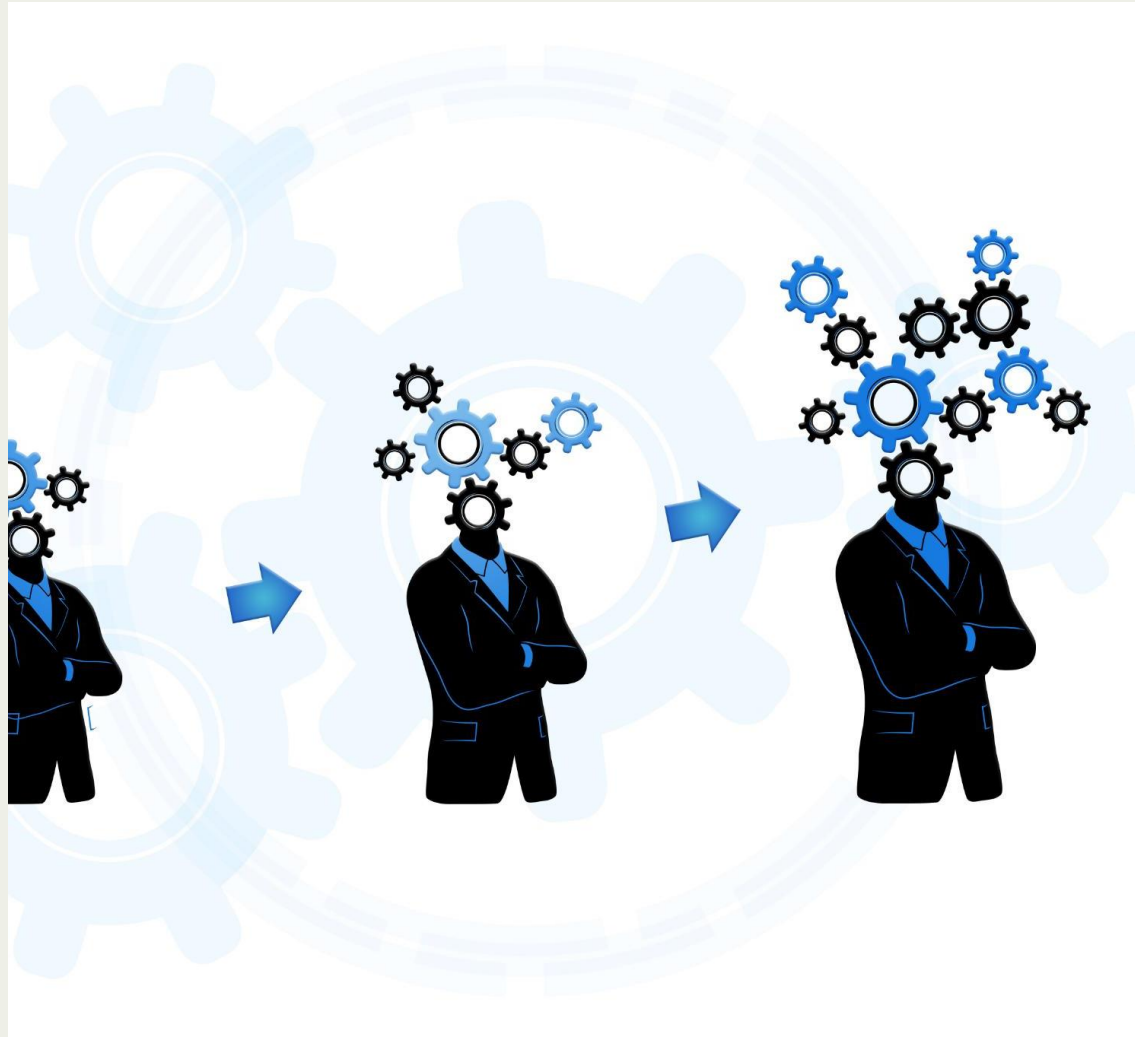
AI adoption requires upskilling, new infrastructure, and cultural changes for data-driven experimentation.

Ethical and Validation Risks

Risks include algorithmic bias, lack of transparency, and validation issues especially in regulated fields.

Potential Rewards

AI can unlock new value, enable predictive analytics, and support nuanced, data-driven decisions.



Balanced Approach: Integration and Organizational Readiness

Complementary Technologies

Automation and AI work together strategically, each enhancing the other's potential for business growth.

Organizational Readiness

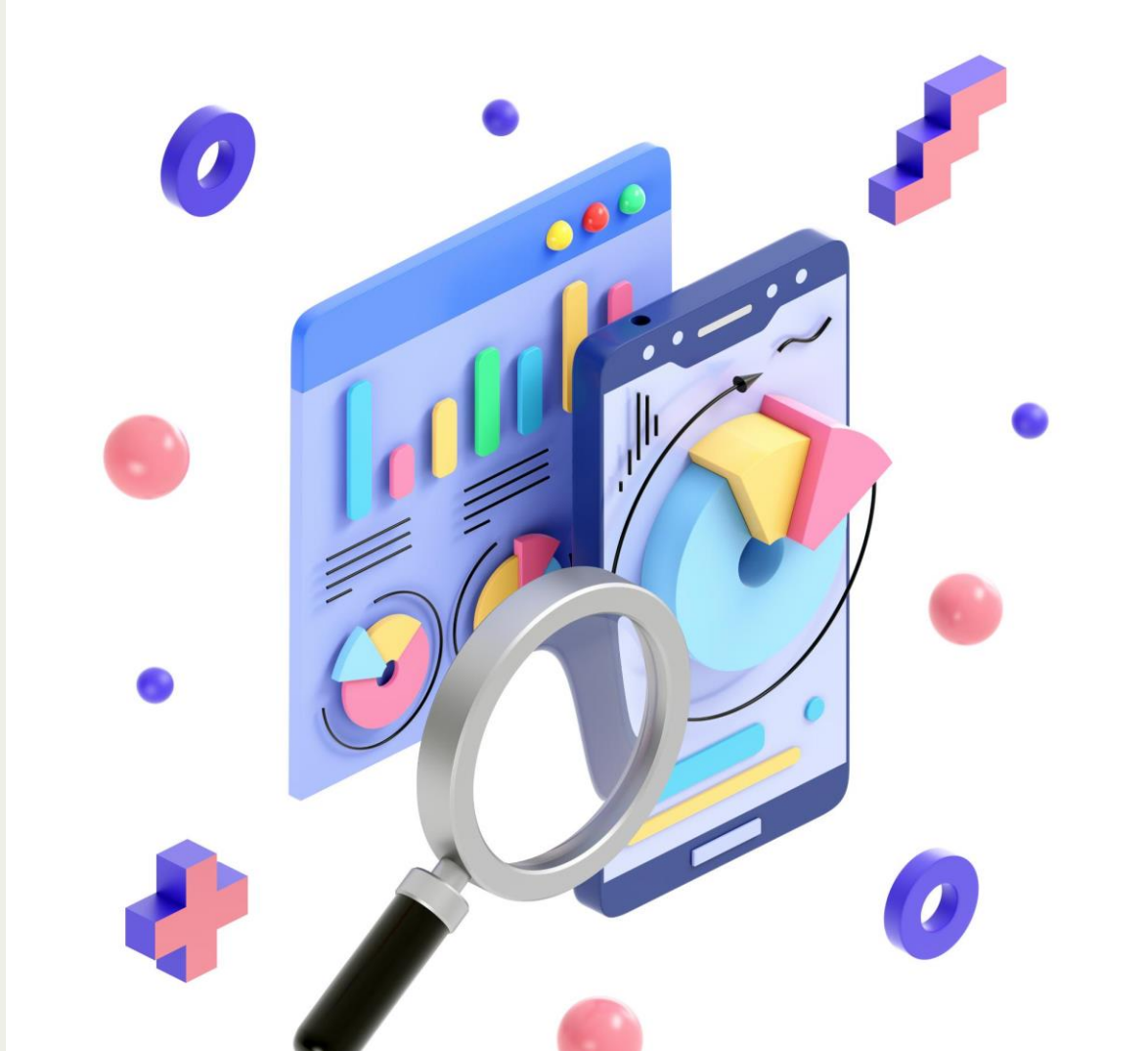
Assessing readiness and resources is vital before adopting automation or AI technologies to ensure success.

Strategic Implementation

Early AI adoption can improve automation strategies, enabling smarter and more efficient processes.

Practical Implications for Statistical Programmers





Real-World Applications: Automation and AI in Practice

Automation in Data Processing

Automation streamlines SDTM/ADaM dataset and TLF generation, saving time and minimizing errors efficiently.

AI-Assisted Data Analysis

AI tools help detect anomalies and suggest optimal models, enhancing accuracy and coding speed.

Continuous Learning & Adaptability

Successful integration requires ongoing learning, tech awareness, and a flexible mindset among programmers.



Collaboration and Communication Across Disciplines

Interdisciplinary Collaboration

Effective AI adoption requires collaboration among diverse teams like data management, regulatory affairs, and clinical operations.

Clear Communication

Transparent communication on benefits and limitations helps set realistic expectations and align organizational goals.

Conclusion

Balancing Automation and AI

Effective integration of automation and AI enhances efficiency for statistical programmers in evolving technology landscapes.

Strategic Prioritization

Prioritizing key technologies and initiatives is essential for maximizing the benefits of AI and automation adoption.

Cross-disciplinary Collaboration

Collaboration among diverse teams drives innovation and successful implementation of AI and automation.

Disclaimers:

- Pictures in this slides are from Microsoft 365 content library through Microsoft co-pilot.
- Most bullet points in the slides are produced using Microsoft Co-pilot, where lengthy sentences are provided as input and prompts are used, such as: “Generate a bullet point in 10–15 words.”

Questions and Responses