DETAILED RESEARCH PROPOSAL / STUDY PLAN
Wuhan University CSC Scholarship Application
Master's Degree in Computer Science (IoT)

Applicant Name: Maria Khan
Degree Level: Master
Program: Computer Science
Research Area: Internet of Things (IoT)
University: Wuhan University, China
Scholarship: Chinese Government Scholarship (CSC)

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1. INTRODUCTION

I am applying for the Chinese Government Scholarship (CSC) to pursue a Master's degree in Computer Science at Wuhan University.
With a strong academic foundation in Computer Science and a growing passion for emerging technologies, I am highly motivated to specialize in the Internet of Things (IoT), smart monitoring systems, and intelligent computing applications.

The Internet of Things is one of the most transformative technological developments of the modern era. By enabling devices, sensors, and systems to communicate and share information, IoT plays a crucial role in smart cities, healthcare monitoring, industrial automation, and sustainable development.

China is recognized as a global leader in smart infrastructure and IoT innovation. Wuhan University provides an excellent research environment, highly qualified faculty, and advanced laboratories, making it an ideal institution for my graduate studies and research growth.

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2. ACADEMIC BACKGROUND

I have completed my Bachelor of Science (BS) in Computer Science. During my undergraduate studies, I gained strong knowledge in:

- Programming and Software Development
- Data Structures and Algorithms
- Computer Networks and Communication Systems
- Database Management Systems
- Web and Mobile Application Development

My academic experience strengthened my analytical thinking, problem-solving skills, and interest in research-based learning.
I am now eager to enhance my expertise through graduate-level research in IoT-based smart systems.

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3. RESEARCH INTEREST AND PROPOSED TOPIC

My intended research area focuses on designing secure, efficient, and intelligent IoT frameworks for smart city monitoring.

Proposed Research Topic:

“AI-Enabled Secure and Energy-Efficient IoT Framework for Smart City Monitoring Applications”

Smart cities depend heavily on IoT devices such as sensors, smart cameras, connected traffic systems, and environmental monitoring tools.
These technologies improve public services, energy management, safety, and sustainability.

However, IoT systems face critical challenges, including:

- Cybersecurity and privacy threats
- High energy consumption in IoT devices
- Limited processing capacity of sensors
- Scalability issues with large deployments
- Secure and reliable data transmission

This research aims to address these challenges by integrating artificial intelligence techniques with optimized IoT architectures.

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4. RESEARCH OBJECTIVES

The main objectives of my proposed research are:

1. To study existing IoT architectures used in smart city applications.
2. To identify major security vulnerabilities and privacy risks in IoT networks.
3. To develop an energy-efficient communication and monitoring framework.
4. To integrate AI or machine learning models for intelligent threat detection.
5. To propose a scalable IoT monitoring solution suitable for smart environments.
6. To evaluate the proposed system based on performance, energy usage, and security improvement.

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5. SIGNIFICANCE OF THE STUDY

This research is significant because smart cities are expanding worldwide, and secure IoT deployment is essential for public trust and safety.

The proposed study will contribute to:

- Improved cybersecurity in IoT environments
- Reduced energy consumption in connected devices
- Smarter monitoring systems for urban sustainability
- Academic research contribution in IoT and AI integration

The outcomes can benefit both developing and developed countries in implementing safe smart infrastructure.

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6. RESEARCH METHODOLOGY

The research will be conducted through the following steps:

A. Literature Review
A comprehensive review of recent studies on IoT security, energy optimization, and AI-based smart

monitoring frameworks.

B. System Design
Designing an IoT architecture for smart city monitoring with secure communication protocols.

C. AI-Based Threat Detection
Applying machine learning techniques to detect abnormal behavior, unauthorized access, and cyber threats.

D. Simulation and Implementation
Using tools such as:

- Python for AI modeling
- IoT simulation environments
- Network analysis tools for performance evaluation

E. Evaluation Metrics
The proposed model will be evaluated using:

- Energy efficiency improvement
- Security enhancement and privacy protection
- Scalability and network performance
- Accuracy of AI-based threat detection

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7. STUDY PLAN AT WUHAN UNIVERSITY

Year 1: Coursework and Foundation

- Completion of core courses in Computer Science and IoT
- Selection of supervisor and research topic refinement
- Detailed literature review and proposal development
- Initial framework design

Year 2: Research Implementation and Thesis Completion

- System development and experimentation
- AI model integration and performance testing
- Writing research papers for publication
- Thesis writing, submission, and final defense

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8. FUTURE CAREER PLAN

After completing my Master’s degree, I aim to return to my home country and contribute to the advancement of IoT-based smart technologies.

My long-term goal is to work as:

- A researcher in smart technology development
- A university lecturer in Computer Science
- A technology specialist in IoT and cybersecurity projects

The knowledge and research experience gained at Wuhan University will enable me to support sustainable digital transformation and innovation.

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9. CONCLUSION

In conclusion, pursuing a Master's degree in Computer Science at Wuhan University through the CSC Scholarship will be a life-changing opportunity for my academic and professional growth.

I am fully committed to conducting meaningful research in secure and energy-efficient IoT frameworks and contributing positively to Wuhan University's academic community as well as to technological development in my home country.

Thank you for considering my application.

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