1. Overview

Product Name

Intelligence & Emerging Systems Research Group (IESRG)

Tagline

Engineering Intelligence at Scale

Product Type

Academic research group under the Department of Software Engineering.

Purpose

To establish a high-impact research group focused on intelligent systems, emerging computing paradigms, and scalable software infrastructure, bridging academic research with real-world deployment challenges.

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2. Problem Statement

Universities often face:

- Fragmented research efforts in AI and systems
- Limited integration between software engineering and infrastructure research
- Low industry collaboration
- Insufficient student exposure to research-grade engineering
- Limited focus on scalable, production-ready intelligent systems

There is a need for a structured research body that integrates:

- Artificial Intelligence
- Software Engineering
- Distributed Systems
- Cloud & Infrastructure
- Performance & Observability Engineering

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3. Vision

To become a leading African research group in intelligent and emerging systems, producing high-impact research, scalable software platforms, and industry-ready engineers.

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4. Mission

To research, design, and deploy intelligent, scalable, and next-generation software systems through interdisciplinary collaboration and applied innovation.

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5. Core Research Pillars

5.1 Intelligent Systems

- Machine Learning & Applied AI
- LLMs & AI Agents
- Computer Vision
- Decision Systems

5.2 Emerging Software Systems

- Cloud-native architectures
- Microservices & distributed systems
- Event-driven systems
- Edge computing

5.3 Infrastructure & DevOps Engineering

- CI/CD automation
- Kubernetes & container orchestration
- Platform engineering
- Infrastructure as Code

5.4 Performance & Observability

- Systems profiling
- AI inference optimization
- Distributed tracing
- Performance benchmarking

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6. Target Audience

Primary

- Undergraduate and postgraduate students (SWE, CS, IT)
- Academic researchers
- Faculty advisors

Secondary

- Industry engineers
- Cloud architects
- AI practitioners
- Research collaborators
- Technology companies

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7. Objectives (Year 1)

- Establish governance and structure
- Recruit 15–25 active members
- Launch 3 research tracks
- Submit at least 1 research paper
- Develop 2 open-source systems projects
- Host 2 expert seminars
- Secure at least one external collaboration

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8. Deliverables

- Research publications
- Open-source infrastructure tools
- AI system prototypes
- Technical whitepapers
- Industry workshops
- Student research mentorship program

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9. Governance Structure

- Director / Group Lead
- Technical Lead (AI)
- Technical Lead (Systems & Infra)
- Research Coordinator
- Publications Lead
- Industry Liaison

Each member must belong to a defined research track.

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10. Success Metrics (KPIs)

- Number of active researchers

- Publications submitted/accepted
- Open-source contributions
- Industry collaborations
- Grants secured
- Hackathon wins
- Conference presentations

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11. Risks & Mitigation

Risk	Mitigation
Low commitment	Selective admission process
Scope creep	Defined research tracks
Funding limitations	Industry partnerships & cloud credits
Loss of continuity	Clear documentation & leadership pipeline

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12. Call to Action

Join IESRG — Intelligence & Emerging Systems Research Group

We invite:

🎓 Students

If you are passionate about AI, distributed systems, DevOps, cloud infrastructure, or performance engineering — and want to build research-grade systems — join us.

🧠 Researchers & Faculty

Collaborate with us on interdisciplinary research in intelligent and emerging systems.
Co-supervise projects. Publish impactful work.

🏢 Industry Experts

Partner with us to:

- Solve real-world infrastructure challenges
- Co-develop AI-driven platforms
- Mentor emerging engineering talent
- Sponsor research initiatives

How to Join

Interested individuals should submit:

- A short statement of interest
- Technical background or portfolio (GitHub/LinkedIn)
- Preferred research track

Contact: [Insert official email]
Website: [Insert URL]
GitHub: [Insert org link]

Closing Statement

> IESRG is not a club.
> It is a research-driven engineering collective focused on building intelligent systems that scale.