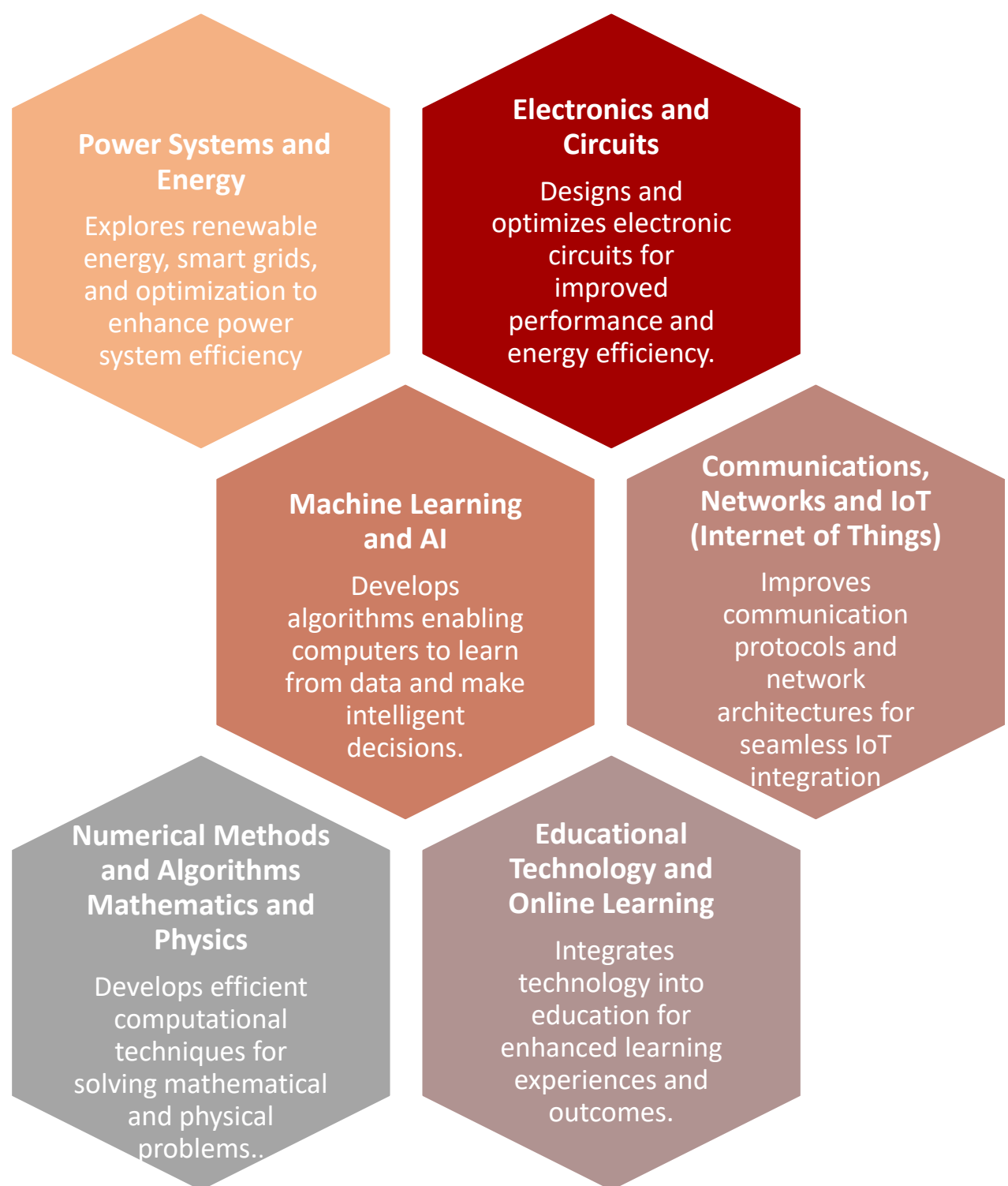# School of Engineering
Research Profile

2023-2024

The King Abdullah II School of Engineering is proud to cultivate a dynamic and forward-thinking research environment, researching cutting-edge topics across various fields. Our Power Systems and Energy team leads the charge in developing renewable energy sources, smart grids, and optimization strategies, shaping the landscape of sustainable power. Meanwhile, our Electronics and Circuits researchers drive innovation, designing circuits that redefine performance and energy efficiency standards.

In the realm of Machine Learning and AI, our experts are pioneers, developing algorithms that empower computers to learn and make intelligent decisions, ushering us into the era of intelligent systems. In Communication and IoT, we shape the connected future, refining protocols for seamless integration in the Internet of Things. Our researchers in Numerical Methods and Algorithms pioneer computational breakthroughs, tackling complex mathematical and physical challenges head-on.

Lastly, our Educational Technology and Online Learning researchers are transforming education by incorporating technology to enhance learning experiences. Together, these dynamic research areas show our commitment to pushing the boundaries of knowledge and fostering innovation that will shape the future of engineering.

Core Research Are

Power Systems and Energy
Explores renewable energy, smart grids, and optimization to enhance power system efficiency

Electronics and Circuits
Designs and optimizes electronic circuits for improved performance and energy efficiency.

Machine Learning and AI
Develops algorithms enabling computers to learn from data and make intelligent decisions.

Communications, Networks and IoT (Internet of Things)
Improves communication protocols and network architectures for seamless IoT integration

Numerical Methods and Algorithms Mathematics and Physics
Develops efficient computational techniques for solving mathematical and physical problems..

Educational Technology and Online Learning
Integrates technology into education for enhanced learning experiences and outcomes.
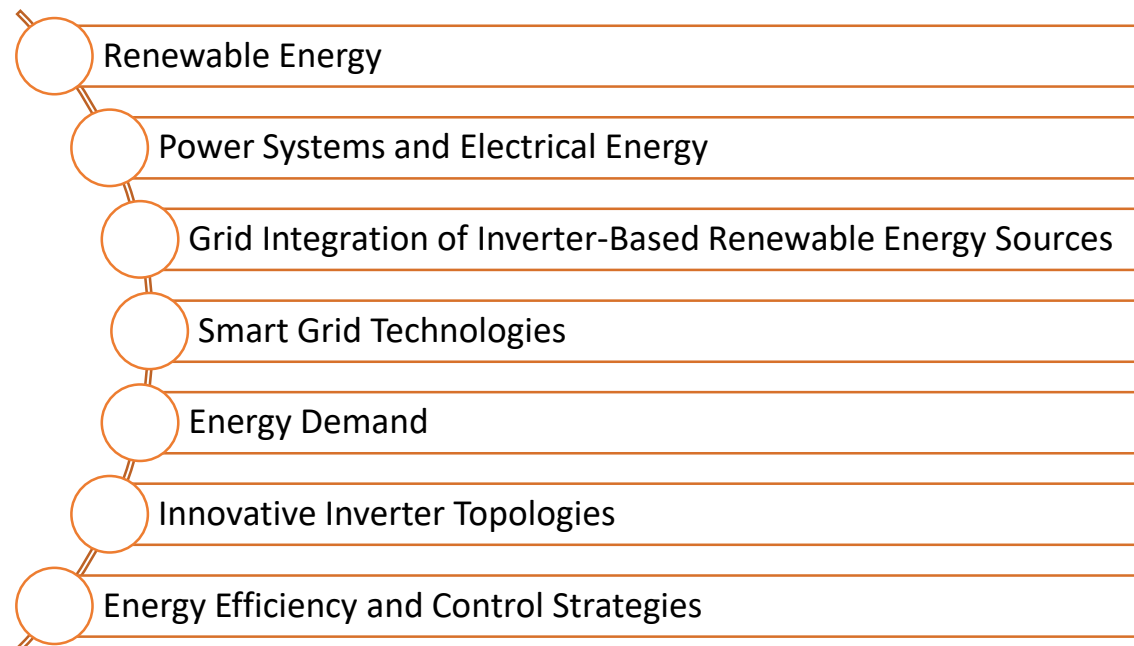
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Power Systems and Energy

- Renewable Energy
- Power Systems and Electrical Energy
- Grid Integration of Inverter-Based Renewable Energy Sources
- Smart Grid Technologies
- Energy Demand
- Innovative Inverter Topologies
- Energy Efficiency and Control Strategies

Selected Publications

M. Qasem, O. Mohamed, and W. Abu Elhaija, 'Parameter identification and sliding pressure control of a supercritical power plant using whale optimizer', *Sustainability*, vol. 14, no. 13, p. 8039, 2022.

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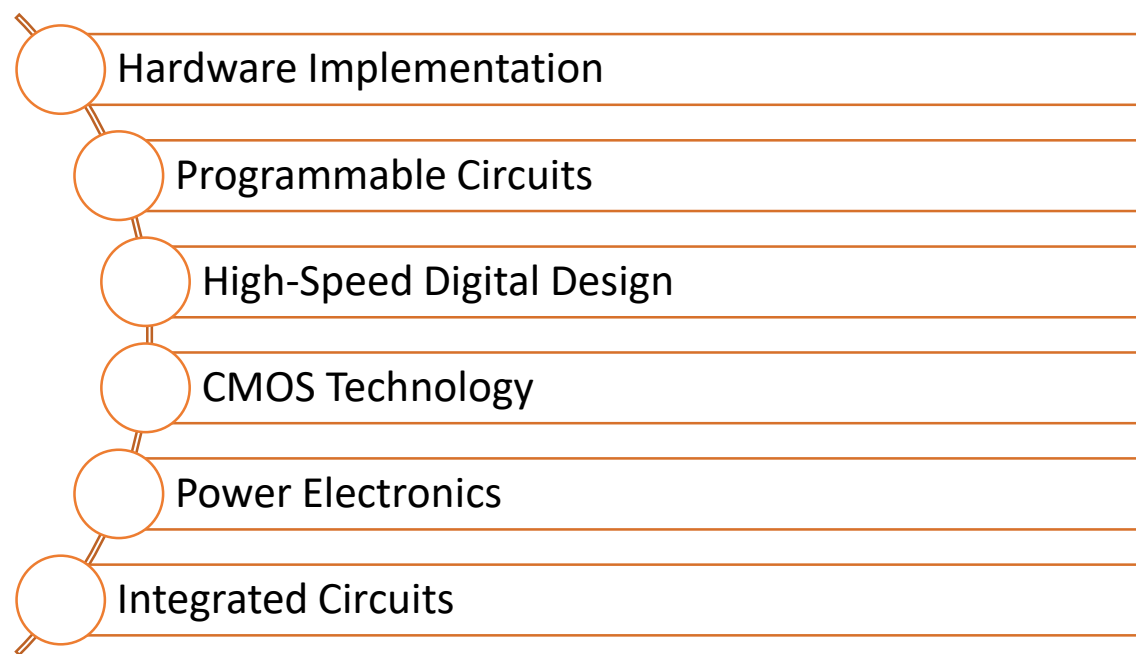
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Electronics and Circuits

- Hardware Implementation
- Programmable Circuits
- High-Speed Digital Design
- CMOS Technology
- Power Electronics
- Integrated Circuits

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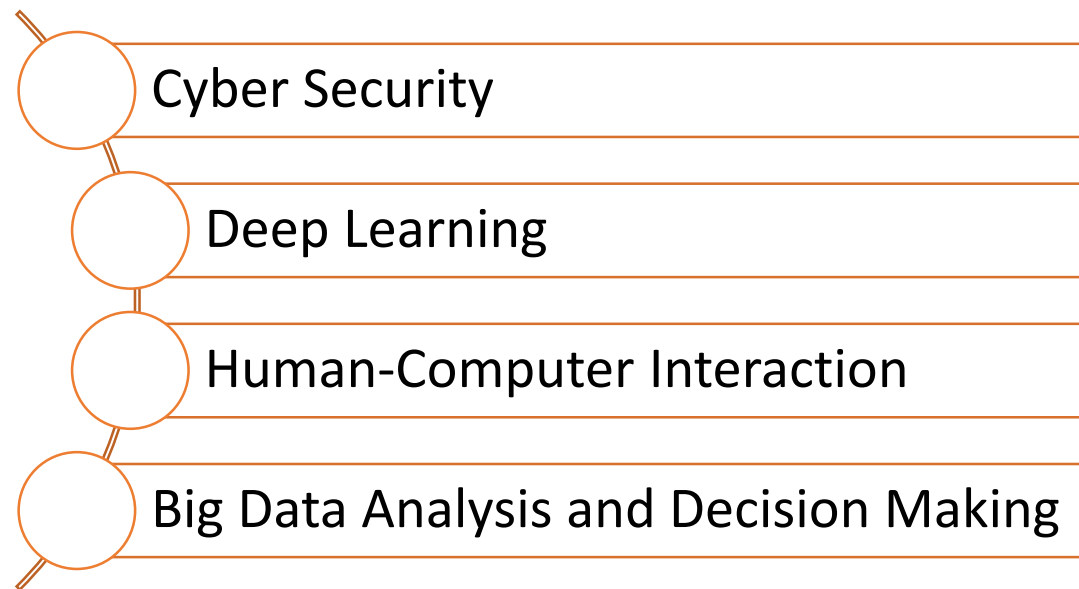
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Machine Learning and Artificial Intelligence

- Cyber Security
- Deep Learning
- Human-Computer Interaction
- Big Data Analysis and Decision Making

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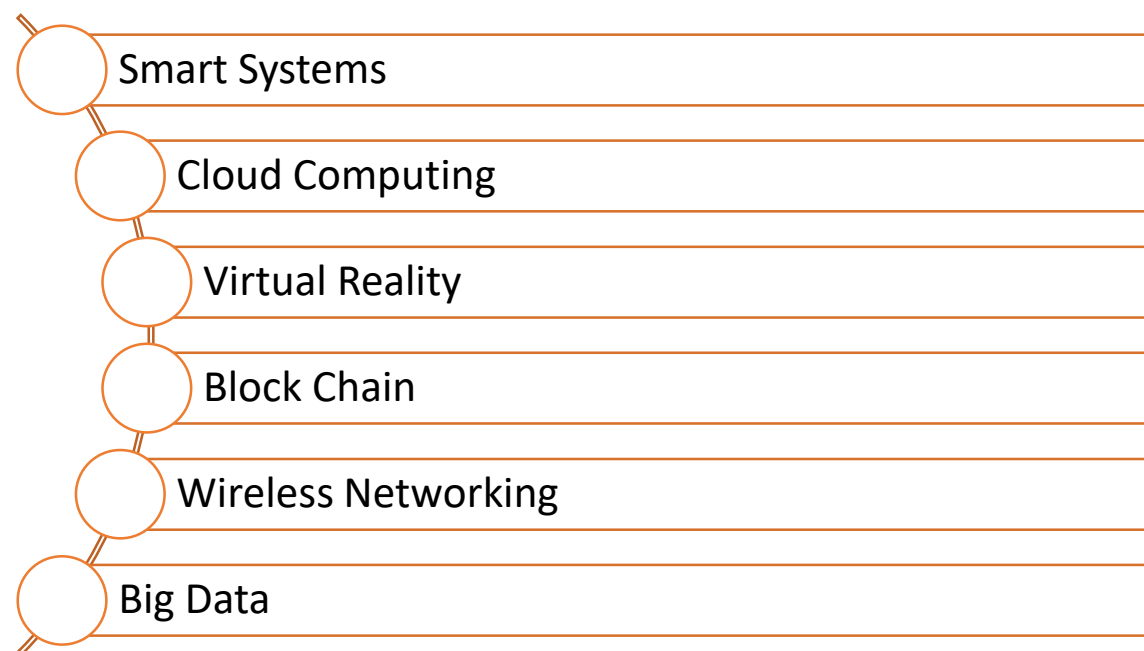
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Communication, networks and Internet of Things(IOT)

- Smart Systems
- Cloud Computing
- Virtual Reality
- Block Chain
- Wireless Networking
- Big Data

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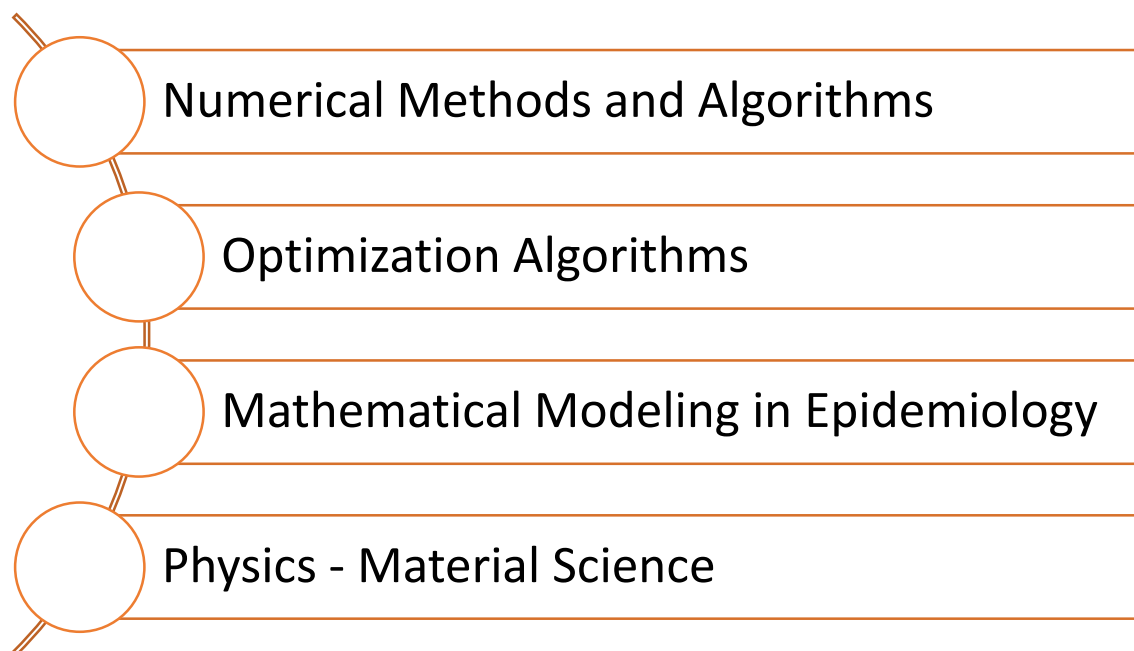
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Numerical Methods and Algorithms
Mathematics and Physics

- Numerical Methods and Algorithms
- Optimization Algorithms
- Mathematical Modeling in Epidemiology
- Physics - Material Science

Selected Publications

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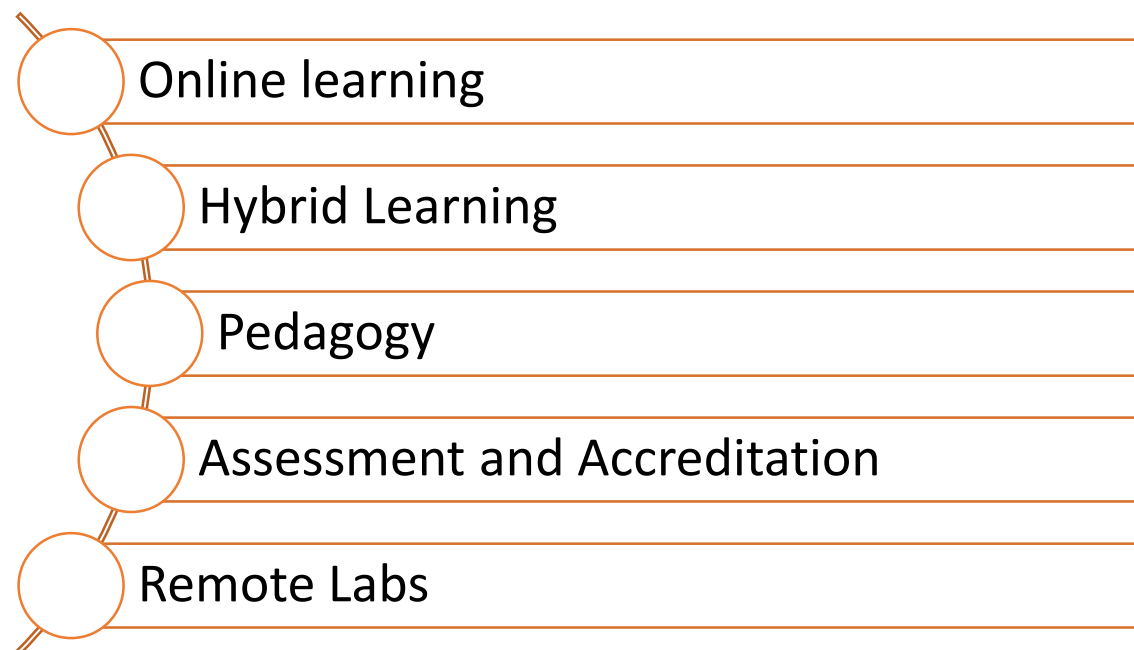
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Educational Technology and Online Learning

- Online learning
- Hybrid Learning
- Pedagogy
- Assessment and Accreditation
- Remote Labs

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