ISEIC'2024 Proposal Template

A. Proposal Information

Project title	Studemeter
Project Challenge Area	IoT and AI technology
School / College / University	Helwan University
Department/Faculty (for University)	**Faculty of engineering**
Industrial partner (if any)	

B. Advisor Information

Advisor Name	Dr. Mohamed M. El-Dakroury
Title	Assistant Professor at Department of Electronics and Communications Engineering Faculty of Engineering at Helwan University
Work Address	Department of Electronics and Communications Engineering Faculty of Engineering at Helwan University
Mobile	01110559200
E-mail	mdakroury@h-eng.helwan.edu.eg
Brief summary of expertise	MOHAMED M. EL-DAKROURY received a B.Sc. Degree in Electronics and Communications Engineering from Cairo University, Egypt in 1995, a M.Sc. Degree in Electrical Engineering from the University of Central Florida, Orlando, USA in 2002, and Ph.D. Degree in Electronics Engineering from Helwan University, Egypt in 2019. From 1997 to 1998, he was an Instrument Engineer at Schlumberger Oil Field Services, Egypt. From 1998 to 2001, he was an Electrical Engineer with FRC Component Products, USA where he worked in design and manufacturing of Magnetic Components for Switching Mode Power Supplies and RF Coils for the aerospace industry using military standards MIL-T-27 and MIL-STD-202. From 2004 to 2005, he joined Arab Organization for Industrialization (Electronics Factory) and participated in the design and implementation of many electronics modules. From 2005 to 2008, he

	joined the Egyptian Telephone Company (QuickTel) as an R&D Engineer, where he participated in the creation of many wireless products based on CDMA2000 standard and used Qualcomm chips. Also while working for QuickTel, he was the CDMA Products Manager. In 2008, he joined Iskraemeco, where he was the R&D Manager for the Middle East & Africa, where he led the R&D effort to create new economic energy meters. In 2010, he joined Department of Electronics and Communications Engineering, Helwan University. Now he is an Assistant Professor of Electronics/Microelectronics. Also, he was a Research Assistant at the Center of Nano-electronics & Devices (CND), The American University in Cairo. From 2021 to 2023, he was the Engineering Director at Iskraemeco Egypt, where he was leading R&D and product management efforts for Energy meters, Water meters, Gas meter, and EV chargers. His research interests are in the areas of embedded systems, Nano-electronic circuits, semiconductor device modeling and AMS & RF micro-electronics.

ISEIC'2024 Proposal Template

C. Project Members Information

#	Full Name	year grade	Strengths (special skills and capabilities)	Mobile number	Email
1	Mohammed hamdy halim	4	Embedded system IoT	01094008520	mohammedhammdy32@gmail.com
2	Ahmed Mohammed Kassem	4	Digital signal processing Embedded system	01113387973	ak2049253@gmail.com
3	Mazen hany abdelsalam	4	AI Data analysis	01096410560	mazenhany1912003@gmail.com
4	Ziad Mahmoud mostafa	4	Web development Software engineering	01098372266	ziadmah2002@gmail.com
5	Karim Mohammed Ali	4	Embedded system Software engineering	01555642011	kmualic@gmail.com

* Please note that the first name will be referred to as the main **CONTACT PERSON** for the whole group.

D. Project Description

Applicants shall provide a brief description of their project. This description should include the following **according to the distribution of scores**:

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1. Overview	(20 point)
(i) Problem definition, (ii) approach and tools/techniques, (iii) overview of system modules (v) **references** and (iv) **possibility to make research paper**	

i) Understanding how students feel, stay focused, and cope with learning challenges can be tricky for teachers. That's where "StudeMeter" steps in. It's like a special tool designed to help teachers know if a student is happy, paying attention, or struggling with their studies and to know the Learning Difficulties and Psychiatric Illnesses like anxiety, depression, and ADHD. The problem we're tackling is ensuring each student gets the support they need to do well in school. "StudeMeter" aims to be the bridge, giving teachers a better way to understand and help every student.

ii) Embedded system, signal processing, and AI.

iii) Sensors like GSR , MPU6050 IMU and max30102 sensors, ,and a Microcontroller

iv) maybe

v)

- Cognitive Load Measurement Using Arithmetic and Graphical Tasks and Galvanic Skin Response
- GALVANIC SKIN RESPONSE MEASUREMENT DATA PROCESSING FOR USER-RELATED INFORMATION EXTRACTION
- Detecting Users' Cognitive Load by Galvanic Skin Response with Affective Interference

2. Impact	(20 point)
Why do you consider this project? What is its impact on community/market/end user/**sustainable development of Egypt 2030…?**	

StudeMeter" is a visionary project poised to elevate the quality of education by effortlessly identifying students' challenges and difficulties. It goes beyond conventional methods, offering a powerful solution that ensures every student receives individualized support.

1. **Seamless Problem Identification:** "StudeMeter" seamlessly identifies students' problems and difficulties, providing educators with an intuitive tool to understand and address challenges swiftly.
2. **Individual Support:** The heart of the project lies in delivering individualized support to each student. By gaining insights into their unique needs, "StudeMeter" empowers educators to tailor assistance, fostering a learning environment where every student can thrive.

3. Novelty and Features	(20 point)
Explain (i) novelty (ii) features, and (iii) related products, if any.	

- Knowing student Emotional State
- Measuring Focus Level
- Detecting Learning Difficulties and Psychiatric Illnesses like anxiety, depression, and ADHD
- Individual Support for Suffering Students

4. Deliverables
What is the project final outcome (HW device, SW package, simulation ...)? Do you foresee any potential marketing or customers? **(20 point)**
Hardware wearable device, yes I see it's excellent in potential marketing or customers

5. Role of the Industrial Partner (if any) **(20 point)**
What is the type of support to be provided by the industrial partner (technical, financial, access…)?

6. Estimated Expenses							(20 point)
An estimate of the itemized costs: Equipment & tools; printing							
Item	**Type (Hardware/ Software/ Other)**	**Specifications (brief description)**	**Justification (why is this item needed?)**	**Vendor/Source**	**Unit Cost**	**No. of Items**	**Total Cost of Items**
1	Stm32f401cc	A microcontroller	Is the brain of the device	ST	250	1	250
2	Esp32	A WiFi module	Used to connect microcontroller with WiFi	espressif	290	1	290
3	GSR	A sensor	Used to measure sweet secretion		500	1	550
4	Max30102	A sensor	Used to measure heart rate		100	1	100
5	MPU6050 IMU	A sensor	Used to measure acceleration		115	1	115
6							
7							
8							
9							
10							
Total Cost of project							1305

بيانات المشروع باللغة العربية

رقم المشروع	اسم المشروع	اسم المشرف	أسماء الفريق (5)	الجامعة / الكلية / المدرسة	كيف يمكن الاستفادة من المشروع في المجالات المختلفة (زراعة / صناعة / طبية /عسكرية/.....)
620	studemeter	د محمد الدكروري	محمد حمدي حليم حمدان احمد محمد قاسم كريم محمد علي زياد محمود مصطفي مازن هاني عبدالسلام	جامعه حلوان كلية هندسة	التعليم