1. **Proposal Information**

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| **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)** |  |

1. **Advisor Information**

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| **Advisor Name** | Dr. Mohamed M. El-Dakroury |
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| **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. |

1. **Project Members Information**

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| **#** | **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.

1. **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** |
| 1. 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. 2. Embedded system, signal processing, and AI. 3. Sensors like GSR , MPU6050 IMU and max30102 sensors, ,and a Microcontroller 4. maybe  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 |

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| 1. **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. |

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| 1. **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 |
| 1. **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 |

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| 1. **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…)? |
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| 1. **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 |
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| **Total Cost of project** | | | | | | | 1305 |

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

**بيانات المشروع باللغة العربية**