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| Project proposal ownership **Proposed to:**  Abdelaziz Trabelsi, Eng, PhD  Professor, Dept. of ECE, Concordia University  **Proposed by:**   * Horia Petre (26035035) * Md Shafayet Sajid (40075368) * Diego Mayorga (40075927)  key-components  * FRDM-KL25Z board * Ultrasonic sensor hc-sr04 * Motor driver * Self-Balancing robot kit * Battery * Wires for Connections   Image result for concordia logo | |  | | --- | | self-balancing robotcoen 6711 microprocessor & their applications | dept-ece concordia university, MOntreal, quebec, canada |  backgroundIn partial fulfillment of the requirements for the completion of course “COEN-6711 Microprocessor & their Application”, we have been assigned to propose and implement one project based on MCU - ARM CORTEX M0+ family.We know that a MCU is particularly used for single task purpose so that the design complexity can be reduced and the efficiency can be escalated. Incorporating a microcontroller unit in a design has made an evolutionary change in the electronics field. Complicated designs now can be remodeled in terms of design simplicity and application. Hence, we considered all the parameters while selecting our project topic and after appropriate research on our project topic we selected “Self-balancing Robot” controlled by MCU- FRDM-KL25Z.Objective & significance This project is focused on designing and implementing a self-balancing robot (vertical balance) with an ARM Cortex M0+ microcontroller that will move at a constant speed in a given direction until it encounters an obstacle. block diagram |

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| control methodThe ARM microcontroller will execute this control logic to stabilize the vertical angle of the robot. Rotation Control  (PD)  Robot  (System)  Speed Control  (PI)  Turn Control  (PD)  Sensors project timeline  Reference: |

1. <https://github.com/hpetre/COEN-6711>
2. <https://www.researchgate.net/publication/236030928_Autonomous_Dual_Wheel_Self_Balancing_Robot_Based_on_Microcontroller>
3. <https://www.semanticscholar.org/paper/Design-and-control-of-a-two-wheel-self-balancing-Juang-Lum/2dad074eed5019eb2b1e3056bbd9b82442ec596a>
4. <https://www.idosi.org/mejsr/mejsr25(4)17/19.pdf>
5. M. Hasan, C. Saha, M. Rahman, R. I. Sarker, S. K. Aditya. Balancing of an Inverted Pendulum Using PD Controller. Dhaka Univ. J. Sci. 60(1): 115-120, 2012