**PROJECT PROPOSAL – 7th Semester**

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|  | **Project Title: FACE DETECTION ALONG WITH THERMAL SCREENING & ATTENDANCE AT ENTRANCES** |
|  | **Branch: Computer Science Engineering**  **Sem & Sec: 7C** |
|  | **Theme: Machine Learning, Deep Learning and Artificial Intelligence** |
|  | **Relevance/Sector:**  **Health**  **Security/ Safety**  **Societal** |
|  | **Name of project guide:**  **Name: Simran Pal R**  **Designation: Assistant Professor**  **Email id: simran.cs@hkbk.edu.in**  **Contact No.: 7795353975** |
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|  | **Team Leader of the Project:**  **Name: SURANKAN CHAKRABORTY**  **USN No.: 1HK19CS159**  **Email id: cksu564@gmail.com**  **Mobile No.: 9883559398** |
|  | **Date of commencement of the Project: 19/09/2022** |
|  | **Probable date of completion of the project:**  **Phase 1: 31/12/2022**  **Phase 2:** 27**/04/2023** |
|  | **Probable date of paper publication**  **Phase 1 - Survey paper: 15/11/2022**  **Phase 2 - Implementation paper: 20/03/2023** |
|  | **Abstract of the project:**  **Problem:** There is a manual thermal checkup at almost all public places and organizations. There is no automated public CCTV filtering of people's identities with sequential logging.  **Solution:** A camera ecosystem which is automated and integrated to detect individuals by their prerecorded facial biometrics, check their heat signature against a threshold, and record that as attendance in a database with the hash of said individual. |
|  | **Objectives of the project:**   * Face Detection and Recognition * Check for mask * Capture the temperature * Logging the record * Manage unknown entities |
|  | **Methodology of work:**    **Facial Recognition:** Dlib’s state-of-art face recognition built using Deep Learning.  **Mask Detection:** Dimension reduction using PCA and Classification using SVM.  **Thermal Screening:** Comparing the heat-map image contour points to a threshold temperature.  **Database Management:** Recognised personal’s attendance and temperature is saved in a DB using SQLite.  **Unknown Entity:** Demographic Details of the personal is saved with Timestamp and Date. The Demographic Data is extracted using Deep Neural Networks. |
|  | **Expected Outcome of the project:**  Successful attendance of registered individuals logged with their temperature abnormality.  Demographic record of unknown individuals. |
|  | **Can the product or process developed in the project be taken up for filing a Patent?**  **No**  **Prior Art search done?**  **No** |
|  | **Budget details:**   |  |  | | --- | --- | | **Budget** | **Amount** | | Security Camera with IR Sensor | 5000.00/- | | Dependencies | 2000.00/- | | **Total** | 7000.00/- | |
|  | **Pert chart for completion of the project in said duration:** |
|  | **Specify Relevance to PO/PSO:**  **PROGRAM OUTCOMES (POs)**  **PO1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.  **PO2. Problem analysis:** Identify, formulate, review research literature, and analyses complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.  **PO3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.  **PO5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an under-standing of the limitations.  **PO6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.  **PO9. Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.  **PO10.Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.  **PO11.Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one’s own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.  **PO12.Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.  **PROGRAM SPECIFIC OUTCOMES (PSOs)**  **PSO1.Problem-Solving Skills:** An ability to investigate and solve a problem by analysis, interpretation of data, design and implementation through appropriate techniques, tools and skills.  **PSO2.Professional Skills:** An ability to apply algorithmic principles, computing skills and computer science theory in the modelling and design of computer-based systems.  **PSO3.Entrepreneurial Ability:** An ability to apply design, development principles and management skills in the construction of software product of varying complexity to become an entrepreneur. |
|  | **Reference:**  **Base Paper:**  Student Attendance System using Face Recognition. DOI: 10.1109/ICOSEC49089.2020.9215441. IEEE Xplore Part Number: CFP20V90-ART  **Others:**   1. Raj, R., Das, A., & Gupta, S. C, “Proposal of an Efficient Approach to Attendance Monitoring System using Bluetooth” 2019 9th International Conference on Cloud Computing, Data Science & Engineering (Confluence). doi:10.1109/confluence.2019.8776978. 2. Zoric, B., Dudjak, M., Bajer, D., & Martinovic, G., “Design and development of a smart attendance management system with Bluetooth low energy beacons” Zooming Innovation in Consumer Technologies Conference (ZINC). doi:10.1109/zinc.2019.8769433, 2019. 3. Alam, M. J., Faisal, F., & Karim, A, “A Proposition for a Low-Cost Effective Attendance Management System”, 5th International Conference on Communication and Electronics Systems (ICCES). doi:10.1109/icces48766.2020.9137974, 2015. 4. Johar, R., Qaisar, S. M., Subasi, A., & Kurdi, R. F., “An Event Driven Attendance Tracker”, 21st Saudi Computer Society National Computer Conference (NCC). doi:10.1109/ncg.2018.8592968, 2018. 5. Saleem Ulla Shariff, Amaranatha C, Ravi Anand Jadhav, Dr. K Suresh Babu, Maheboob Hussain, “Face and Bio-Metric Based Attendance and Security System using RFID and Arduino”, International Journal of Electrical Electronics & Computer Science Engineering. |
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| **Project Guide** | **Chief – Project Coordinator**  DR. Deepak N R | **HOD**  DR. Ashok Kumar PS |