**Application for patent filing**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Date** | **D** | **D** | **M** | **M** | **Y** | **Y** | **Y** | **Y** |
| 0 | 8 | 0 | 5 | 2 | 0 | 2 | 3 |

|  |  |  |
| --- | --- | --- |
| Name of the Faculty | : | **Dr Beaulah R Jeyavathana** |
| Department | : | **CINTEL** |
| Faculty ID Number | : | **102829** |
| Official E-mail ID | : | **pp7432@srmist.edu.in** |
| Contact no. of all Inventors |  | **+919829778167** |
| Major area of invention | : | **Payment processing and financial technology** |
| Narrow focus area of invention | : | **Near Field Communications (NFC) which is a subset of RFID** |
| **Title of the invention** |  | **Tap-a-Tap Payments** |
| Earlier status of research | : | **Research has been going on since the early 2000s and there has been a significant increase in adoption of contactless payments** |
| How different your invention from similar research / others - **Novelty**? | : | **The novelty of this application lies in the convenience it offers to students and faculty, who may already always carry their ID cards with them. With Tap-a-Tap, they can make purchases quickly and easily, without having to carry additional cards or cash. It also offers a secure method of payment, as the ID card can be linked to a specific account or pre-loaded with a set amount of funds. All the other contactless payments require a card to be issued by the banking authority but Tap-a-Tap requires only the Institute issued ID card.** |
| Possible domain for field application | : | **Falls under RFID (NFC) communications and contactless payments** |
| Possible sector for commercialization | : | **Retail and Transportation Sector especially for small transactions** |
| Faculty Signature with date | : |  |

**Invention Disclosure Form**

**To be filled by the inventors**

Please provide highly relevant information for details asked below and use consistent language while describing the specific feature or element in the invention disclosure.

|  |  |
| --- | --- |
| 1. | **Title of invention** (Please indicate a title for the invention and technology of the invention)  **Tap-a-Tap Payments** |
| 2. | **Describe the invention**. (Please describe specifically about the general purpose of invention. Is the invention a new process, device of product, system, software or a combination of these elements?)  The invention of tap-to-pay using institute ID cards can be seen as an extension of contactless payment technology, which has been in development for several years. The concept of using ID cards as a payment method is not new, as some institutions have been offering this service using magnetic stripe cards for several years. However, the adoption of contactless payment technology has enabled a more convenient and secure method of payment using institute ID cards. |
| 3. | Does the invention provide a **new use of or improvement to an existing product or process**? (Highlight the use or improvements from the existing with recent and relevant references)  Yes, Tap-a-Tap can be considered an improvement to an existing process of using ID cards for payment.  The invention of Tap-a-Tap provides a new use for an existing product - the ID card - by enabling it to be used as a contactless payment device. This eliminates the need for students, faculty, and staff to carry cash or physical credit cards, and provides a more streamlined and convenient payment method. |
| 4. | State the **Novelty** of the invention and specify the claims in the invention  Tap-a-Tap can be considered a novel application of contactless payment technology. This method enables students, faculty, and staff to make purchases on campus by tapping their ID cards on either a payment terminal or the smartphone of the retailer, without the need for cash or physical credit cards.  Moreover, Tap-a-Tap can also offer benefits to the institution itself. For example, it can provide a streamlined payment system for on-campus purchases, reducecash handling and processing costs, and improve transaction tracking and reporting. |
| 5. | Describe the **advantages of the present invention over the existing technologies** (please identity the advantages e.g., efficiency, cost benefits, simplicity etc.)  **Convenience:** Tap-a-Tap provides a more convenient payment method than carrying cash or physical credit cards. Students, faculty, and staff can make purchases quickly and easily by simply tapping their ID cards on a payment terminal.  **Enhanced Security:** This invention offers enhanced security measures such as tokenization, dynamic CVV codes, and biometric authentication. This makes it more secure than traditional magnetic stripe cards, which are vulnerable to skimming and cloning.  **Efficiency:** Tap-a-Tap provides a more efficient payment system for on-campus purchases. It eliminates the need for cash handling and processing, reducing costs and the risk of errors associated with manual processes.  **Cost benefits:** The adoption of Tap-a-Tap can result in cost savings for institutions. It eliminates the need for multiple payment terminals, reduces cash handling costs, and improves transaction tracking and reporting.  **Streamlined processes:** Tap-a-Tap can be easily integrated with existing infrastructure such as student information systems and campus card management systems. This enables streamlined processes for fund management, payment options, and transaction tracking**.**  **User-friendly:** Tap-a-Tap is a user-friendly payment method, as it eliminates the need for carrying multiple cards and cash. It is also easy to set up and use, making it accessible for students, faculty, and staff of all levels of technical expertise. |
| 6. | Describe how the **present invention overcomes the drawbacks** of currently available technology related to your invention. (please include the relevant references)  Firstly, magnetic stripe cards are vulnerable to skimming and cloning attacks, as the static data on the stripe can be easily copied. Chip and PIN cards offer better security, but they can still be subject to skimming and fraud attacks, and require a physical card insertion into a reader. In contrast, Tap-a-Tap offers enhanced security features such as tokenization, dynamic CVV codes, or biometric authentication, making it a more secure payment method.  Secondly, it offers a more convenient payment method than magnetic stripe cards or chip and PIN cards. It eliminates the needfor a physical card insertion or entering a PIN, and provides a faster and more seamless payment experience.  Thirdly, it offers cost benefits to institutions. It eliminates the need for multiple payment terminals, reduces cash handling costs, and provides more efficient transaction tracking and reporting. This can result in cost savings for institutions, and enable them to allocate resources more effectively. |
| 7. | Describe **uses, applications and benefits** of the invention.  Tap-a-Tap can be used for a variety of applications, including:   1. On-campus purchases: Students, faculty, and staff can use their institute ID cards to make purchases at campus stores, vending machines, and other on-campus locations. 2. Dining services: Tap to pay using institute ID cards can be used for purchasing meals and snacks at campus dining facilities. 3. Printing and copying services: Students and faculty can use their ID cards to pay for printing and copying services on campus. 4. Library services: Students can use their ID cards to borrow books and other materials from the library, as well as pay for printing and copying services. 5. Parking services: Tap to pay using institute ID cards can be used to pay for parking permits or parking meter fees on campus. 6. Public transportation: Some universities and colleges have partnerships with local transit agencies, allowing students to use their ID cards as a transit pass for buses and trains.   The benefits of Tap-a-Tap include:   1. Convenience: It provides a more convenient payment method than carrying cash or physical credit cards. 2. Enhanced security: The use of tokenization, dynamic CVV codes, and biometric authentication provides enhanced security compared to traditional payment methods. 3. Streamlined processes: The integration of Tap-a-Tap with existing infrastructure such as student information systems and campus card management systems enable streamlined processes for fund management, payment options, and transaction tracking. 4. Cost benefits: It can result in cost savings for institutions by reducing the need for cash handling and processing, and improving transaction tracking and reporting. 5. Environmentally friendly: The use of Tap-a-Tap reduces the need for paper receipts and can help promote environmental sustainability. |
| 8. | Does the focus of the invention results in **societal impact technology**? (Please describe how in detail, also specify the commercial applications, market need of product/ service of invention and why?)  Yes, the focus of Tap-a-Tap results in a societal impact technology, as it provides a more convenient, secure, and efficient payment method for students, faculty, and staff on campus. This technology has the potential to benefit the wider community beyond universities and colleges, as tap to pay using institute ID cards can also be used for public transportation and other applications.  The commercial applications of Tap-a-Tap include the development and implementation of campus card management systems and payment processing systems that integrate with existing infrastructure. This can result in a new market for payment processing companies, card manufacturers, and system integrators, as well as opportunities for universities and colleges to generate revenue through the provision of payment services.  The market needs for Tap-a-Tap are driven by the growing demand for contactless payment solutions that provide enhanced security and convenience. The COVID-19 pandemic has also accelerated the adoption of contactless payment methods, as consumers seek to minimize contact with shared surfaces.  The societal impact of tap to pay is significant, as it offers a more convenient and secure payment method that can benefit students, faculty, and staff on campus. This technology can also promote financial inclusion, as it provides a payment option for those who may not have access to traditional banking services. |
| 9. | Characterize the **disadvantages and limitations** of the invention.  While tap to pay invention offers many advantages, there are also some disadvantages and limitations that should be considered:   1. Limited acceptance: It may not be accepted by all merchants or vendors, which could limit its utility in some settings. 2. Technical limitations: The technology used in tap to pay requires the use of NFC-enabled point-of-sale terminals (also retailer NFC-enabled smartphone), which may not be available in all locations. 3. Cost: Implementing tap to pay technology requires a significant investment in infrastructure, including card readers, system integrations, and security measures. 4. Security concerns: While tap to pay cards are generally considered to be secure, there is always a risk of fraud or data breaches, which could compromise the personal and financial information of users. 5. Potential for misuse: There is a risk that users may misuse the technology or lose their ID cards, resulting in unauthorized transactions or fraudulent activity. 6. Need for user education: Users may require education and training on how to use Tap-a-Tap technology effectively and securely, which could create additional costs and logistical challenges for institutions. |
| 10. | Enclose the **sketches, drawings, photographs,** and other materials that help in better understating/ illustration of the novelty in the invention.  The invention is self-explanatory and may not require pictures, etc in the current stage. |
| 11  . | **Current development status of the invention**   1. Has your invention been tested experimentally   Tap-a-Tap is currently undergoing experimental testing to evaluate its performance and effectiveness. The testing is being conducted to ensure that the technology is reliable and secure and meets the needs of its intended users. Once the testing is completed, the results will be analysed and used to refine and improve the technology. Currently, I am unable to provide further details on the ongoing testing or its results, but I am committed to ensuring that the technology is rigorously tested before it is made available to the public.   1. Describe the experimental approach of the invention also state the methods adopted in the experiment.   The experimental approach for Tap-a-Tap involves creating a test environment that simulates real-world conditions where the technology will be used. This includes setting up a system of NFC-enabled point-of-sale terminals and instituting security measures to ensure that user data is protected. The tests may then involve using the technology in varioussituations, such as at different types of merchants or in different geographic locations, to evaluate its performance and reliability.  The methods adopted in the experiment will depend on the specific objectives of the testing and may include collecting and analysing data on user behaviour, system performance, and security measures. This data is being gathered through surveys, interviews, or observations, and is being analysed using statistical methods to identify patterns and trends.   1. Are the experimental data is documented in a formal log or any instrumental confirmation available for the invention (kindly provide the details)   Yes, the experimental data for Tap-a-Tap is documented in a formal log using the Flask framework's built-in logging technology. Flask provides a flexible and configurable logging system that can be used to capture detailed information about the performance, behaviour, and errors of the application during testing. The log files are then used to track system events, debug issues, and monitor performance metrics.   1. Is further development of your invention being necessary or development of the invention is in progress (provide the relevant information)   Yes, further development of the tap to pay using institute ID card invention is necessary, and the development of the invention is still in progress. While I have made significant progress in testing the technology, there are still opportunities to refine and improve its design, performance, reliability, and security.  I am working on optimizing the user experience of the technology to make it more intuitive and seamless for users. I am also exploring ways to enhance the security of the system, by incorporating additional authentication measures and secure encryption and transportation of user data.  As part of my ongoing development efforts, I am also exploring potential partnerships and collaborations with other organizations and stakeholders who may be interested in the technology but not so actively looking for them. These collaborations could help me to expand the reach and impact of the technology and to identify new applications and use cases for the invention. |
| 12. | **Please list any of your publications** (including abstracts, posters, news releases, etc.) to emphasize the present invention background.  Currently there are not any publications available because its still very new and under development. |

13. **INVENTOR(S) AND/OR CONTRIBUTOR(S):**

|  |  |  |  |
| --- | --- | --- | --- |
|  | INVENTOR (1) |  | INVENTOR (2) |
| Signature: |  |  | - |
| Name: | Prerak Lodha |  | - |
| Address: | Department - CINTEL, SRM IST, Kattankulathur campus-603203 |  | - |
| City and State: | Chennai & Tamil Nadu |  | - |
| Citizenship  (Country): | INDIAN  INDIA |  | -  - |

**14. ASSIGNMENT DETAILS: Assignee is the entity or individual who holds the patent.**

|  |  |
| --- | --- |
| Signature: (To be signed by the authorized signatory on behalf of the assignee) |  |
| Name of the Authorized Signatory and Designation |  |
| Address: |  |
| City and State: |  |
| Citizenship  (Country): |  |