

# Theme : Artificial Intelligence

## Subject : Authentication by User Behavior

### Introduction

The goal of this research project is to develop an implicit method for user authentication. Current authentication methods like password entry are significantly more annoying and difficult to perform on mobile devices, leading users to create and reuse shorter passwords and pins, or opt for no authentication at all, which leave sensitive information vulnerable to theft.

Currently, there is no method to seamlessly authenticate a mobile device user. Emerging methods are facial, fingerprint and iris recognition, which are advanced forms of authentication methods but still require explicit action by user. It would be interesting to explore a new method that can be utilized without involving explicit actions from the user. The distinct user behavior, such as location, motion (walking style, device orientation, etc.), typing pattern, communication, and usage of applications and so on, could be used to create detailed profile of the user, which can be potentially utilized for implicit authentication methods. This natural implicit authentication can lead to improved usability and security by continuously authenticating the user throughout the day. It will also relieve users from the burden of entering passwords or using other explicit methods.

### Scope

Challenges that significantly advance new authentication method based on user behavior patterns including:

- Exploration of new implicit method for seamless, yet secure way of authentication
  - User's physical behavior such as walking style, device orientation, typing/swiping pattern, etc.
  - Contextual information such as location, Activities, Communication, Usage of applications, etc.
- Validation of the method by use study, how well it can maintain confidence in the identity of the user

### Research questions

We are interested in the following research questions. These questions are not exhaustive but different research questions are open to discuss with research partners.

- What are the key user parameters that can be applied for secure authentication?
- What are the practical and viable methods that can provide seamless user experience?
- What innovations in authentication methodology, besides user behavior for implicit methods can be explored?

### Expected Deliverables

The following is open to discussion:

- Suggestion of new implicit method and how it can best be applied for seamless user authentication
- Proof of concept and/or Prototype algorithm
- Patents with Samsung (if agreed)
- Detailed quarterly progress reports summarizing accomplishments