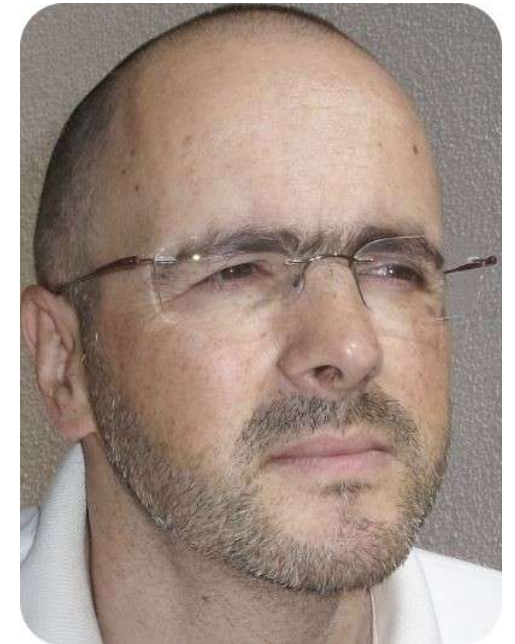# Temas de Tese 2017-2018

- Os temas de tese aqui apresentados serão orientados por mim, Prof. Paulo Ferreira (alguns com co-orientação de outros docentes)

- Existem outros temas de tese nas quais sou co-orientador (e que não são aqui apresentadas)

- Mais informações:
  - Contacto directo (Alameda ou Tagus)
  - Email: paulo.ferreira@inesc-id.pt

novaVM – current needs from Big Data applications and Java platforms

- **Goal:**
    - There is a clear need for efficient data processing from a large number of applications in several areas (e.g. network analytics and visualization, credit card fraud detection, etc.).

    - For this purpose, there are several big-data platforms (BGPATs) that are instrumental for the success of such applications. For example, Spark (a multi-threaded map-reduce engine), Cassandra (a no-sql distributed database) and Neo4j (a graph database), among many others, can support applications that manipulate a huge amount of data.

    - This theme goal is to perform a study on recent solutions (w.r.t. migration and GC) designed to cope with the scalability requirements posed by BGPATs.

    - This work will provide a clear view over the recent works on migration and GC, which aim to improve the performance of Big Data applications (e.g. by reducing the negative performance impact of GC). More precisely, this study will address current BGPATs and their memory profiles to understand why classic solutions (which are still the most common) are not appropriate, and also analyze recently proposed and relevant memory management algorithms, targeted to Big Data environments.

- **Requisitos:**
    - The candidate must enjoy and have adequate skills to deal with low-level system issues related to the Java Virtual Machine and Linux operating system.
    - Also relevant is a good tracking record (grades, classes done), enthusiasm, and commitment.

- **Local:**
    - The work will be developed at INESC ID and will possibly require to spend some time in Feedzai.

- **Observations**:
    - Possible integration into a research project with scholarship.

- **Degrees:**
    - MEIC-A, MEIC-T, METI
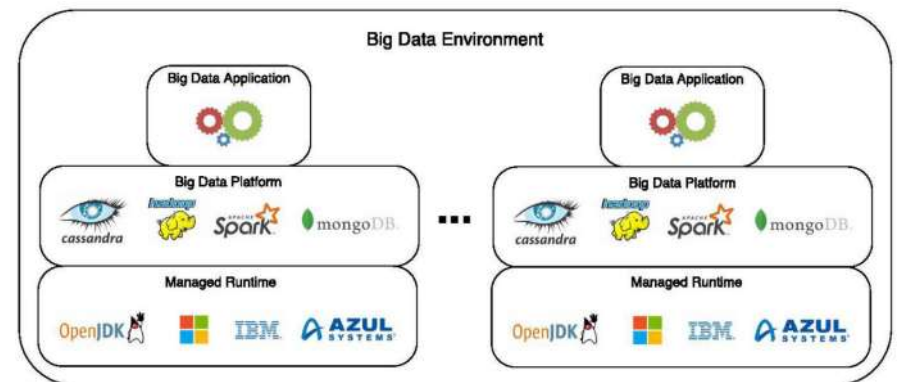
evalBiklio – evaluate the resources usage of an Android and iOS smartphone app

- **Goal:**
  - Biklio is a smartphone app, running in both Android and iOS, designed to promote active modes of transportation, primarily cycling.
  - From the moment you sign in, Biklio transparently monitors your modality. When Biklio is confident enough you've been cycling, you become eligible for cycle to spot benefits. Then, you just have to go to a spot, show Biklio and you'll get a benefit for you green initiative. Additionally, you can also record your cycling routes, which can be used to claim special benefits. The app running in Android and in iOS has some internal differences (e.g., related to location tracking) that impact the energy spent.

  - The goal of this work is to evaluate and compare both apps w.r.t. resources used, energy in particular, and develop the corresponding solutions.

- **Requisitos:**
  - The candidate must enjoy and have adequate skills to deal with mobile system issues related to Android and iOS.
  - Also relevant is a good tracking record (grades, classes done), enthusiasm, and commitment.
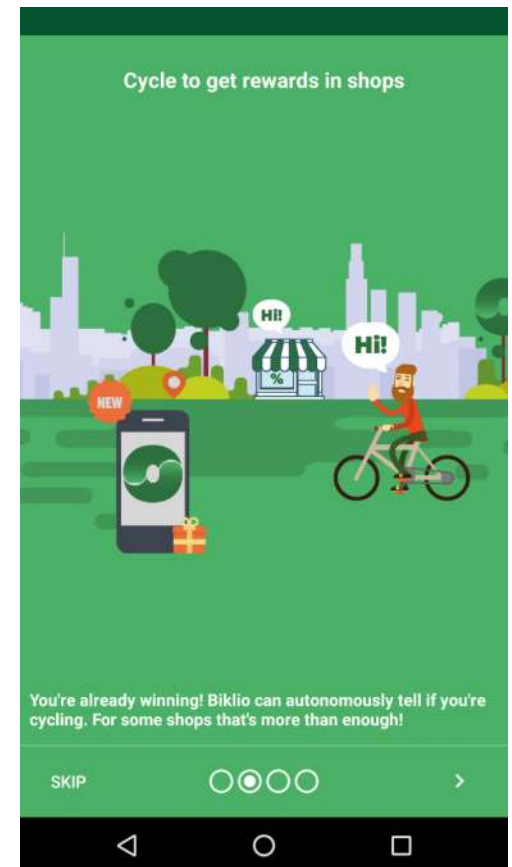
- **Local:**
  - The work will be developed at INESC ID.

- **Observations**:
  - Possible integration into a research project with scholarship.

- **Degrees:**
  - MEIC-A, MEIC-T, METI

DTBM - Detecting Travel and Behavioral Mode

- **Goal:**
  - Develop a smartphone application that will be used to collect mobility and behavioral data regarding their users.
  - The data collection process will also aim to achieve balance in terms of participation by gender, age and other demographic characteristics.

- **Requisitos:**
  - The candidate must enjoy and have adequate skills to deal with mobile system issues related to Android and iOS.
  - Also relevant is a good tracking record (grades, classes done), enthusiasm, and commitment.

- **Local:**
  - The work will be developed at INESC ID.

- **Observations**:
  - Possible integration into a research project with scholarship.

- **Degrees:**
  - MEIC-A, MEIC-T, METI