Controllability and observability of dynamic systems

Programa Institucional de Bolsas de Iniciação Científica

PIBIC 2017/2018

2 Positions

Description

Our understanding of natural or technological systems is reflected by our ability to control them. Control theory is a highly developed mathematical branch of engineering with applications in production processes, communication systems, aircraft and robots and it offers the mathematical tools to drive systems to a desired state. The concepts of controllability and observability are some of the most important aspects for the operability of the processes ([1]). The goal of this project is the evaluation of the dynamic performance of a given process through controllability and observability analysis.

Focus will be given to linear and stationary systems represented in the form of state space. Given the social and environmental importance of water pollution prevention, emphasis will be placed on biological processes related to wastewater treatment plants. The controllability and observability properties of unit process models will be defined and investigated.

The project seeks enthusiastic and qualified students with background in control theory, differential equations and linear algebra.

If you are interested, get in contact: MICHELA.MULAS@UFC.BR

References

[1] Ogata K. 1997. *Moder control engineering*, Prentice Hall.