BSPro - A First Bachelor Semester Project in BiCS-land

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Abstract

This document is a template for the scientific and technical (S&T for short) report that is to be delivered by any BiCS student at the end of each Bachelor Semester Project (BSP). The Latex source files are available at: ***https://github.com/nicolasguelfi/lu.uni.course.bics.global***

This template is to be used using the Latex document preparation system or using any document preparation system. The whole document should be in between 6000 to 8000 words [1] *(excluding the annexes) and the proportions must be preserved. The other documents to be delivered (summaries, ...) should have their format adapted from this template.*

1. Introduction (± 5% of total words)

This paper presents the bachelor semester project made by Motivated Student together with Motivated Tutor as his motivated tutor. It presents the scientific and technical dimensions of the work done. All the words written here have been newly created by the authors and if some sequence of words or any graphic information created by others are included then it is explicitly indicated the original reference to the work reused.

This report separates explicitly the scientific work from the technical one. In deed each BSP must cover those two dimensions with a constrained balance (cf. [BiCS(2018b)]). Thus it is up to the Motivated Tutor and Motivated Student to ensure that the deliverables belonging to each dimension are clearly stated. As an example, a project whose title would be "A multi-user game for multi-touch devices" could define as scientific [Armstrong and Green(2017)] deliverables the following ones:

- Study of concurrency models and their implementation
- Study of ergonomics in human-computer interaction

The length of the report should be from 6000 to 8000 words excluding images and annexes. The sections presenting the technical and scientific deliverables represent ± 80% of total words of the report.

1. i.e. approximately 12 to 16 pages double columns

2. Project description (± 10% of total words)

2.1. Domains

2.1.1. Scientific . Provide a description of the scientific domain(s) in which the project is being made.

2.1.2. Technical. Provide a description of the technical domain(s) in which the project is being made.

2.2. Targeted Deliverables

2.2.1. Scientific deliverables. Provide a synthetic and abstract description of the scientific deliverables that were targeted to be produced. Each BSP must contain some work done according to the principles of the scientific method. It basically means that you should define at least one question related to the knowledge domain of your BSP and follow part of the scientific method process to answer to this question. The description of the work done to answer this question is a scientific deliverable.

Examples of question could be:

- Is Python an adequate language for concurrent programs?
- How can we measure the ergonomic of a graphical user interface?
- How can we ensure that a program will not fail?

An answer to such question should be the result of applying partly or totally the scientific method according to its standard definition which can be found in the literature.

As you can see in this template, the scientific deliverable is entirely separated from the technical deliverable. Of course it addresses a question more or less closely related to the technical deliverable.

2.2.2. Technical deliverables. Provide a synthetic and abstract description of the technical deliverables that were targeted to be produced.

3. Pre-requisites ([5%..10%] of total words)

Describe in these sections the main scientific and technical knowledge that is required to be known by you before starting the project. Do not describe in details this knowledge but only abstractly. All the content of this section shall not used, even partly, in the deliverable sections.

3.1. Scientific pre-requisites

3.2. Technical pre-requisites

4. Scientific Deliverable 1 – What is a Microservice?

For each scientific deliverable targeted in section 2
2 provide a full section with all the subsections described below.

4.1. Requirements (± 15% of section's words)

Describe here all the properties that characterize the deliverables you produced. It should describe, for each main deliverable, what are the expected functional and non functional properties of the deliverables, who are the actors exploiting the deliverables. It is expected that you have at least one scientific deliverable (e.g. "Scientific presentation of the Python programming language", "State of the art on quality models for human computer interaction", ...) and one technical deliverable (e.g. "BSProSoft - A python/django website for IT job offers retrieval and analysis", ...).

4.2. Design (± 30% of section's words)

Provide the necessary and most useful explanations on how those deliverables have been produced.

4.3. Production (± 40% of section's words)

Provide descriptions of the deliverables concrete production. It must present part of the deliverable (e.g. source code extracts, scientific work extracts, ...) to illustrate and explain its actual production.

4.4. Assessment (± 15% of section's words)

Provide any objective elements to assess that your deliverables do or do not satisfy the requirements described above.

5. Scientific Deliverable 2 – What is the relationship between DevOps and Microservices?

5.1. Requirements

5.2. Design

5.3. Production

5.4. Assessment

6. Technical Deliverable 1 – What is the relationship between DevOps and Microservices?

6.1. Requirements

6.2. Design

6.3. Production

6.4. Assessment

7. Technical Deliverable 2 – Does E4L allow for easy deployment of adjacent Microservices?

7.1. Requirements

7.2. Design

7.3. Production

7.4. Assessment

Acknowledgment

The authors would like to thank the BiCS management and education team for the amazing work done.

8. Conclusion

The conclusion goes here.

References

[BiCS(2018a)] BiCS Bachelor Semester Project Report Template. https://github.com/nicolasguelfi/lu.uni.course.bics.global University of Luxembourg, BiCS - Bachelor in Computer Science (2017).

[BiCS(2018b)] Bachelor in Computer Science: BiCS Semester Projects Reference Document. Technical report, University of Luxembourg (2018)

[Armstrong and Green(2017)] J Scott Armstrong and Kesten C Green. Guidelines for science: Evidence and checklists. *Scholarly Commons*, pages 1–24, 2017. https://repository.upenn.edu/marketing_papers/181/

[1] Impact of Multiple Modalities on Emotion Recognition: Investigation into 3D Facial Landmarks, Action Units, and Physiological Data. *Diego Fabiano, Manikandan Jaishanker and Shaun Canavan*

[2] Deformable Synthesis Model for Emotion Recognition. *Diego Fabiano and Shaun Canavan*

[3] Emotion Recognition using Spatiotemporal Features from Facial Expression Landmarks. *Hamid Golzadeh, Diego R. Faria, Luis J. Manso, Anikó Ekárt and Christopher D. Buckingham*
[4] Facial Landmark-Based Emotion Recognition via Directed Graph Neural Network. *Quang Tran Ngoc, Seunghyun Lee and Byung Cheol Song*
[5] Facial Expression Recognition Using Facial Landmarks and Random Forest Classifier. *M. I. N. P. Munasinghe*
[6] I Know How You Feel: Emotion Recognition with Facial Landmarks. *Ivona Tautkute, Tomasz Trzcinski and Adam Bielski*
[7] Spatial Temporal Graph Convolutional Networks for Skeleton-Based Action Recognition *Sijie Yan, Yuanjun Xiong and Dahua Lin*
[8] Survey on RGB, 3D, Thermal, and Multimodal Approaches for Facial Expression Recognition: History, Trends, and Affect-related Applications *Ciprian A. Corneanu, Marc Oliu, Jeffrey F. Cohn, and Sergio Escalera*
[9] Classic Human Anatomy in Motion: The Artist's Guide to the Dynamics of Figure Drawing; Chapter 4. Facial Muscles and Expressions https://doctorlib.info/anatomy/classic-human-anatomy-motion/5.html

9. Appendix

All images and additional material go there.