TECNOLÓGICO SUPERIOR DE JALISCO
MARIO MOLINA
ZAPOPAN

Seminario de investigación

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Seminario de investigación

Un proceso reflexivo, sistemático y crítico que tiene como propósito fortalecer en el estudiante las habilidades requeridas en el manejo de la información y la comunicación para desarrollar investigación científica, valiéndose de la formación para el trabajo tanto personal como en equipo, y original sobre un tema específico.

Asimismo busca iniciar el estudio de nuevos objetos de investigación.

Objetivo

- Articular los procesos de **formación e investigación (Tesis)**
- para que los estudiantes adquieran competencias **interpretativas, argumentativas y propositivas**.
- Formar a los participantes para la investigación científica
- Desarrollar habilidades: pensamiento crítico, capacidad de observar e identificar los problemas presentes en tópicos bajo análisis,
- Buscar respuestas a preguntas claves y sustentarlas teórica y metodológicamente en forma verbal y por escrito.
- **Desarrollar aplicaciones**

Metodología

- Discusión de temas para sus tesis
- Presentación de artículos de investigación vinculado a su tema de tesis.
- Avances en sus temas de investigación y en sus tesis.
- Uso de herramientas: Tareas, Git, procesador de texto (Latex).
- Presentación de avances

Maestría

- Tiene bases fuertes

- Tiene conocimiento acerca del estado del arte

Maestría

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- **Tiene conocimiento acerca del estado del arte**
  - **Datos**
  - **Simulación**
  - **Métodos /algoritmos**

Purposes of Thesis Projects

Learning more. The project is an opportunity for studying a subject in more depth.

A stepping stone towards finding and securing a job. You may view the project as preparation for working life, by practising your skills and knowledge on realworld problems.

A stepping stone towards graduate studies. You may use the project as preparation for graduate studies, by exploring a research problem and learning about the research process.

EDUCATIONAL PURPOSES

Develop	Develop your critical thinking •ability to approach something new in a systematic and logical way, and to use creative and diverse, yet systematic ways to approach and solve a problem.
Enhance	Enhance your ability to work independently
Increase	Increase your understanding of how to use and appreciate scientific methods as tools for problem solving
Develop	Develop your presentation skills, oral as well as written
Support	Support opinions with trustworthy evidence, data and logical reasoning; and also the ability to decide how a problem fits into a larger context.

RESEARCH PURPOSES

You will deepen your understanding of the subject area, and contribute to the common knowledge and understanding of the subject area.

The gains from your project are based on the contribution it makes, i.e. the development of knowledge and results that were not known before you started the project, and on the fact that the findings will have been disseminated.

Dissemination of results is necessary in order to ensure that the knowledge is spread to other people working in the field. Even though you might learn a lot from the project, no one else will do so if the results are not disseminated.

Actors in the Project

The three main actors in the project are the student, the supervisor and the examiner.

Of the three actors, the student, since he is the one who moves the project forward. He focus on solving some well-defined problem in a specific area, and thereby increase your understanding of the area. But he also learn methods that can be used to approach, structure and solve complex problems.

The supervisor is your ally. He or she should not only give you advice to help you achieve success in your project, but will also critically point out strengths andweaknesses. The dialogue between you and the supervisor serves as a compass for establishing directions when exploring new areas.

The examiner is the person who critically evaluates your work, and recommends or decides the grade. The examiner has significant experience, enabling him or her to review your work with respect to both content and method.

PROCESS OF A PROJECTS

1. DEVELOPING YOUR PROJECT PROPOSAL

2. DEVELOPING YOUR PROBLEM DESCRIPTION

3. FOLLOWING THE OBJECTIVES

4. PRESENTING AND ANALYSING YOUR DATA

5. DRAWING YOUR CONCLUSIONS AND IDENTIFYING FUTURE WORK

6. PRESENTING AND DEFENDING YOUR WORK ORALLY

7. PREPARING THE FINAL VERSION OF YOUR REPORT

8. FINAL EXAMINATION

Assessment Criteria

- General
- Relevance of chosen topic
- Originality of chosen topic
- Significance of findings
- Degree to which the work is the student's own work (as opposed to the supervisor)

Assessment Criteria

- Report
- Clarity of presentation
- Consistency between different parts of the report
- Degree of insight apparent from the arguments presented to support the decisions made in the project
- Ability to differentiate between others' thoughts and your own
- Ability to handle references and citations
- General stylistic impression

Assessment Criteria

- Defence
- Degree of insight apparent from the arguments presented to support claims and conclusions
- Degree of insight apparent from discussion in response to relevant questions
- Other
- How the student performed as opponent
- Fulfilment of deadlines and other formal requirements

CRITERIOS DE EVALUACIÓN

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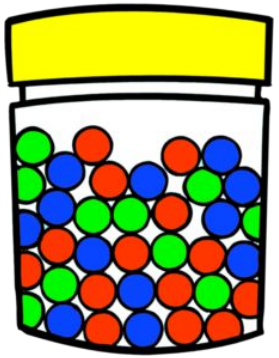
- Actividades . 20 pts.
- Actividades para realizar el protocolo de investigación. 40 pts.
- Entrega final protocolo de investigación. 20 pts.
- Presentación de protocolo. 20 pts.

Data Types

- **Continuous**

- **Discrete**

- **Categorical**



- **Binary**
  - Special case of categorical

- **Ordinal**

How do you feel today?

- 1 – Very Unhappy
- 2 – Unhappy
- 3 – OK
- 4 – Happy
- 5 – Very Happy

How satisfied are you with our service?

- 1 – Very Unsatisfied
- 2 – Somewhat Unsatisfied
- 3 – Neutral
- 4 – Somewhat Satisfied
- 5 – Very Satisfied

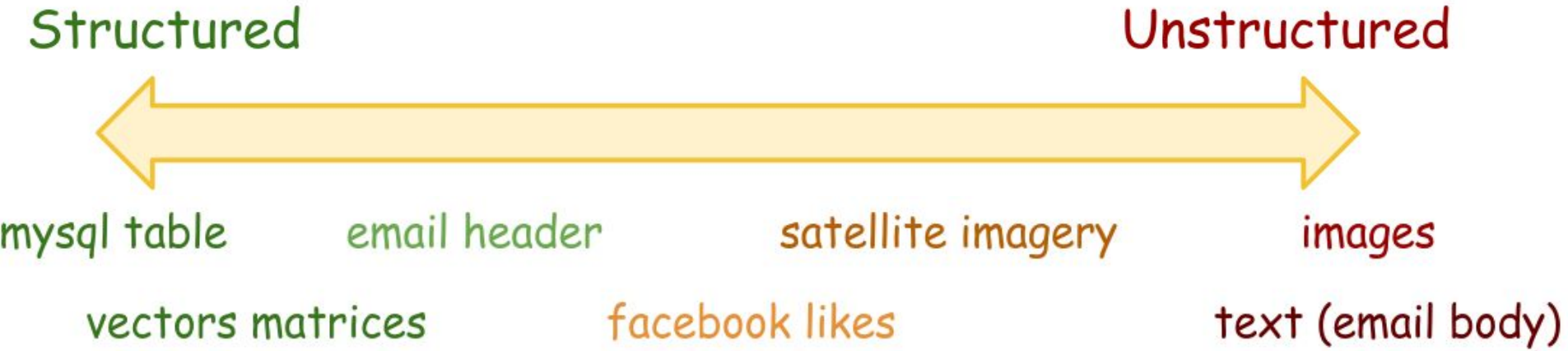
¿Qué son los datos?

- La palabra dato tiene su origen etimológico en el término latino «*Datum*» que significa "*lo dado*" ¿Es en realidad algo dado ?
- Hechos, fechas, números que se extraen de la realidad registrada en un lugar físico o simbólico.
- Colecta de medidas
- De manera aislada no dice nada
- Se pueden dividir en tres tipos
    - Estructurado: bases de datos, surveys
    - Semi-estructurado: redes sociales, grafos, una página web
    - No- estructurado: texto, audio, vídeo, imagen

Adquisición de datos, almacenamiento, procesamiento, visualización
Actividad 2

https://drive.google.com/file/d/1dPfwepNNxUAV7NWV4Od87Thw2fduJEsQ/view?usp=sharing

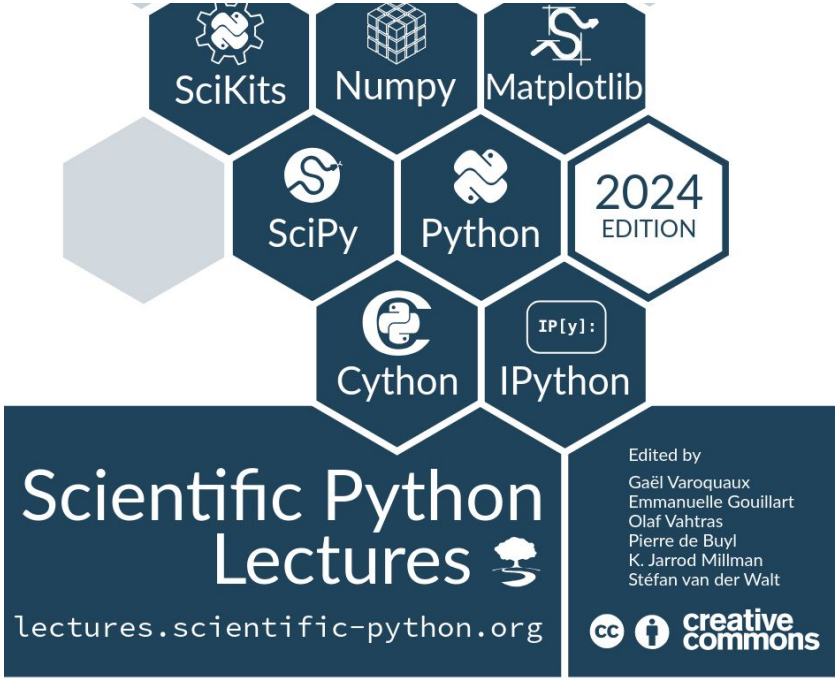
Tipos de datos



- Unstructured ≈ requires processing to get what is of interest
- Feature extraction used to turn unstructured into structured
- Near infinite amounts of potential features in unstructured data

Python

https://lectures.scientific-python.org/_downloads/ScientificPythonLectures-simple.pdf



Fuentes de datos para iniciar

Estados Unidos: Data.gov (clima, salud, educación, transporte, etc.).

Unión Europea: European Data Portal.

Francia: data.gouv.fr (transportes, medio ambiente, economía, entre otros).

India: data.gov.in.

Reino Unido: data.gov.uk.

NASA: Open Data Portal (datos espaciales, imágenes satelitales, etc.).

NOAA: National Centers for Environmental Information (clima, océanos, atmósfera).

European Space Agency: Copernicus Open Access Hub (imágenes satelitales).

Kaggle Datasets: Kaggle

DrivenData: drivendata.org