

Robótica Móvil

Presentación del curso



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17 de agosto de 2021

- Materia:
13B6727 Robótica Móvil - Doctorado en Ingeniería en Robótica y Mecatrónica.
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- Crear un ente con capacidades a las de un humano.

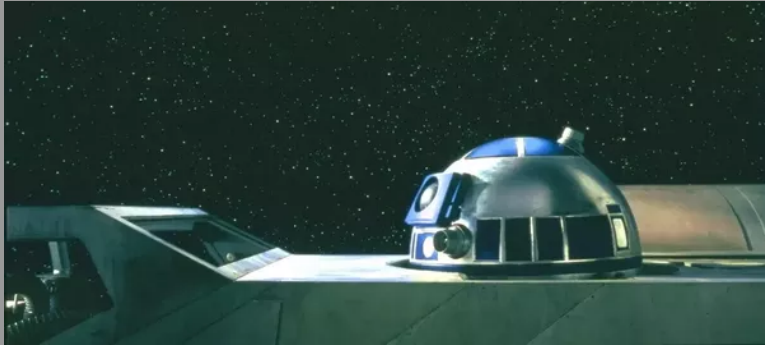


Figura: R2D2 from Starwars

- Robota aparece en 1923 en la obra de Carel Capek.

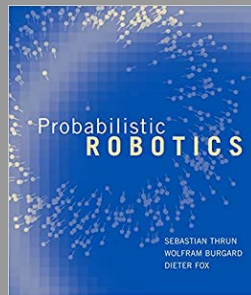
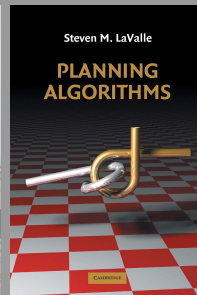
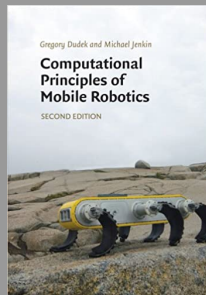
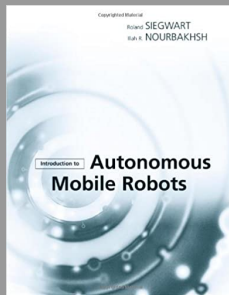
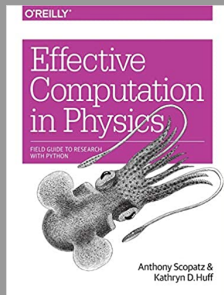
- Establecer los conceptos básicos de la robótica móvil así como programar los algoritmos clave para el funcionamiento de un robot autónomo.

- La robótica involucra diversas áreas:
 - Ingeniería mecánica - Diseño y mecanismos
 - Ciencias computacionales - Representación y planificación
 - Ingeniería eléctrica - Integración de sistemas
 - Psicología cognitiva - Punto de vista biológico

- Introducción
- Representación y transformaciones
- Locomoción
 - Cinemática
 - Dinámica
- Planificación
 - Discreta
 - Basada en muestreo
- Control
- Percepción
- Localización

- Álgebra Lineal
<https://es.khanacademy.org/math/linear-algebra>
- Cálculo
- Python
<https://www.udacity.com/course/introduction-to-python--ud1110>
- Gazebo Simulator
<http://gazebosim.org/>
- Sistema Operativo de Robots (ROS)
<https://www.ros.org/>

- Scopatz, A. and Huff, K.D., 2015. Effective computation in physics: Field guide to research with python. .O'Reilly Media, Inc.”
- Siewart, Nourbakhsh, Scaramuzza. Autonomous Mobile Robots. MIT Press
- Dudek, G., & Jenkin, M. Computational principles of mobile robotics. Cambridge university press.
- Steven M. LaValle. Planning algorithms. Cambridge University Press
- Sebastian Thrun, W. Burgard, D. Fox. Probabilistic Robotics. MIT Press
- Sucar, L. E. (2015). Probabilistic graphical models. Advances in Computer Vision and Pattern Recognition. London: Springer London. doi, 10, 978-1.



- Lecturas
- Ejercicios
- Tareas con reporte (miniproyectos) - 70 %
- Proyecto final - 30 %

- Formato IEEE conferencia.
- Máximo 2 páginas.
- Incluir resumen de lecturas.
- Describir su trabajo.
- Mostrar sus resultados.
- De preferencia editar el Latex.

Paper Title* (use style: *paper title*)

Subtitle as needed (*paper subtitle*)

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line 1 of Affiliation: dept name of organization
line 2= name of organization, acronym acceptable
line 3= City, Country
line 4= e-mail address if desired

Authors Name(s) per 2nd Affiliation (Author)
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Abstract—This electronic document is a “*TeX*” template and already defines the components of your paper (title, text, leads, etc.) in its title block. **“*PDF*” file.** Do not use **Verbatim**, **Special Characters**, or **Math in Paper Title or Abstract**. (Abstract)

Keywords—computer, formatting, style, styling, issue (key words)

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Finally, complete content and organizational editing before formatting. Please take note of the following items when proofreading spelling and grammar:

A. Abbreviations and Acronyms

Define abbreviations and acronyms the first time they are used in the text, even after they have been defined in the abstract. Abbreviations such as IEEE, SI, MKS, CGS, ac, dc, and rms do not have to be defined. Do not use abbreviations in the title or leads unless they are unavoidable.

B. Units

- The only SI (MKS) or CGS as primary units. (SI units are encouraged.) English units may be used as secondary units (in parentheses), an exception would be the use of English units as identifiers in trade, such as “35-milth disk drive.”

- Avoid combining SI and CGS units, such as current in amperes and magnetic field in oersteds. This often leads to confusion because equations do not balance dimensionally. If you must use mixed units, clearly state the units for each quantity that you use in an equation.

- Do not mix complete spellings and abbreviations of units: “Wh/m²” or “watts per square meter,” not “wh/m².” Spell units when they appear in text: “a few henries,” not “a few H.”
- Use a zero before decimal points: “0.25,” not “.25.” Use “cm,” not “c.”; “shell (s)”

Preguntas?

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