Stabilizzazione nel piano di Gough-Stewart

27 novembre 2021

Presentato da
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Argomenti trattati

Introduzione

Introduzione
Piattaforma di Gough-Stewart

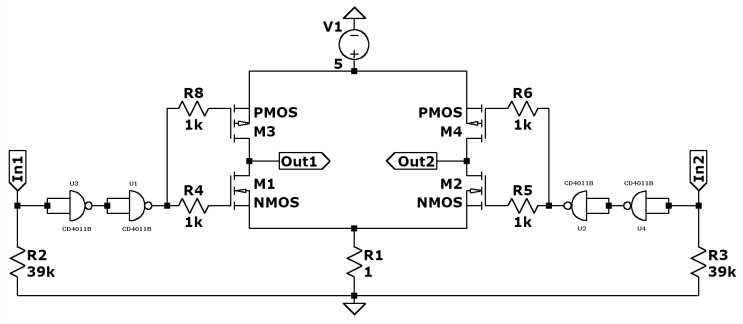
- Robot parallelo
- Esapode
- 6 gradi di libertà
- Attuatori rotativi

Introduzione
Tecnologie impiegate

- Arduino
- Servomotori
- Piano resistivo
- Ponte ad H

Introduzione
Realizzazione ponte ad H

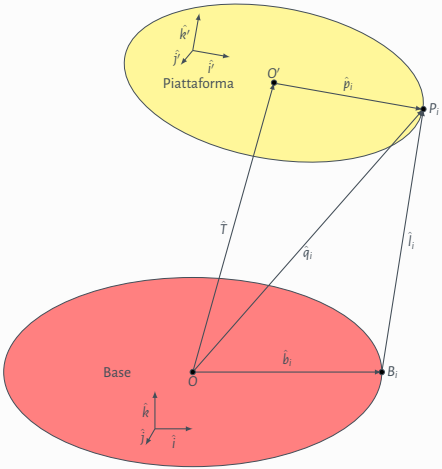
- Arduino
- Servomotori
- Piano resistivo
- Ponte ad H



Modello matematico

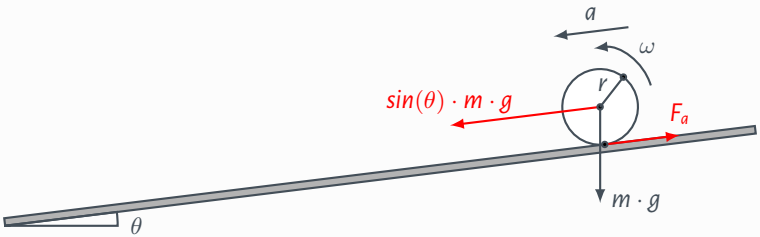
Modello matematico
Piattaforma di Gough-Stewart

- Analisi vettoriale
- Problema attuatori rotativi
- Angoli per raggiungere una posizione nello spazio



Modello matematico
Piano inclinato e controllore PID

- Funzione di trasferimento piano inclinato
- Controllore PID
- Analisi di stabilità
- Miglioramenti impiegati



Realizzazione pratica

Realizzazione Pratica
Assemblaggio

- Modello e stampa 3D
- Servomotori
- Piano resistivo
- Ponte ad H

Realizzazione Pratica
Programmazione

- Controllo semplice e intuitivo:
  `setPosition(x, y, z, rol, pit, yaw);`
- Controllo raggiungibilità posizione
- Implementazione controllore PID:
  `setPosition(0,0,108,radians(tiltX),radians(tiltY),radians(0));`
- Filtraggio dati
- Analisi all'oscilloscopio
- Programmazione figure di Lissajous

Realizzazione Pratica
Programmazione

Grazie per l’attenzione!

Installation

Installation

The theme consists of five files

1. `beamerthemeUniNA.sty`
2. `beamerinnerthemeUniNA.sty`
3. `beamerouterthemeUniNA.sty`
4. `beamercolorthemeUniNA.sty`
5. `beamerfontthemeUniNA.sty`

The theme can either be installed for local or global use.

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Local Installation

The simplest way of installing the theme is by placing the five theme files in the same folder as your presentation.

Installation

Global Installation

- If you wish to make the theme globally available, you must put the files in your local LaTeX directory tree. The location of the root of the local directory tree depends on the operating system and the LaTeX distribution.
- Refer to your distribution's documentation for details.

Installation
Required Packages

Of course, you have to have the Beamer class installed. In addition, the theme loads the following packages:

- TikZ[1];
- calc, fp, adjustbox, setspace, transparent.

These packages are very common and should therefore be included in your LaTeX distribution.

[1] By the way, TikZ is an awesome package for creating beautiful graphics, and this is a footnote.

User Interface

User Interface
Loading the Theme and Theme Options

The Presentation Theme

It is very simple to load the presentation theme. Just type
`\usetheme[<options>]{UniNA}`
which is exactly the same way other beamer presentation themes are loaded. The presentation theme loads the inner, outer, color and font UniNA theme files and passes the `<options>` on to these files.

User Interface
Theme Options

Theme options

The following options are available:

- `rotationcw`: set the direction of the rotation of the progress circle to clockwise instead of counterclockwise.
- `sectionpages`: show section pages.
- `logo`: used to specify the path to the logo to use in the upper right corner.

User Interface
Modifying the Theme

- You can modify specific elements of the theme through the templates provided by the beamer class. Please refer to the beamer user manual for instructions.

User Interface
Modifying the Theme

- You can modify specific elements of the theme through the templates provided by the beamer class. Please refer to the beamer user manual for instructions.
- For example, on this rather bizarre-looking slide the following commands have been used:

```
\setbeamercolor{UniNA}{fg=blue!50,bg=green!60}
\setbeamercolor{structure}{fg=red}
\setbeamercolor{frametitle}{use=structure,fg=structure.fg}
\setbeamercolor{itemize/enumerate body}{fg=white, bg=red}
\setbeamercolor{normal text}{fg=white}
\setbeamercolor{alerted text}{fg=blue}
\setbeamercolor{background canvas}{bg=purple!50}
```

User Interface
Modifying the Theme

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User Interface
Modifying the Theme

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User Interface
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User Interface
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  2. compile `logo/logo-federico-II.tex` with `xelatex`;
- With your version of the logo in place, you can change the value of the `logo` parameter to the path of your own logo.

This is a frame with no header thanks to the `plain` option.

Unnumbered frame
Subtitle

This is a frame not contributing to the frame count, thanks to the `noframenumbering` option.

Math and blocks

Test math and blocks

The following text is alerted in the next slide. Now some math mode: if $R = \{x \mid x \notin x\}$, then $R \in R \Leftrightarrow R \notin R$.

Observation

This is an observation.

Example 14

This is a nice example block.

Beware!

Naive set theory is *a wolf in sheep's clothing?*

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Standout frames

The UniNA beamer theme supports standout frames. For example, the following

```
\begin{frame}[plain,noframenumbering]
\standoutpage{This is a dark standout frame!}
\ end{frame}

\begin{frame}[plain,noframenumbering]
\standoutpagelight{This is a light standout frame!}
\ end{frame}
```

produces the following two slides.

This is a dark standout frame!

This is a light standout frame!

User Interface
Widescreen Support

Widescreen Support

Newer projectors and almost any modern TV support a widescreen format such as 16:10 or 16:9. Beamer (>= v. 3.10) supports various aspect ratios of the slides. According to section 8.3 on page 77 of the Beamer user guide v. 3.10, you can write

```
\documentclass[aspectratio=1610]{beamer}
```

to get slides with an aspect ratio of 16:10. You can also use 169, 149, 54, 43 (default), and 32 to get other aspect ratios.

Thank you for your time!