The Duckietown Book

The last version of this book and other documents are available at this URL:
https://duckietown.github.io/duckuments/

TABLE OF CONTENTS

Part 1
The Duckietown project

Chapter 1
What is Duckietown?

TODO: Write the mission statement

1.1. Watch some videos

TODO:

1.2. Read papers about Duckietown

The paper [1] describes the Duckiebot and its software. With 29 authors, we made the record for a robotics conference.

This paper [2] describes the course design for Duckietown: learning objectives, teaching methods, etc.

1.3. Beginnings of Duckietown

TODO:

1.4. Duckietown around the world

TODO:

1.5. Coming up in 2017

TODO:

CHAPTER 2

First steps

2.1. How to get started

If you are an instructor, please jump to Chapter 3.

If you are a self-guided learner, please jump to Chapter 4.

If you are a company, and interested in working with Duckietown, please jump to Chapter 5.

2.2. How to keep in touch

TODO: add link to Facebook

TODO: add link to Mailing list

TODO: add link to Slack?

2.3. How to contribute

TODO: If you want to contribute to the software...

TODO: If you want to contribute to the hardware...

TODO: If you want to contribute to the documentation...

TODO: If you want to contribute to the dissemination...

CHAPTER 3
Duckietown for instructors

CHAPTER 4

Duckietown for self-guided learners

TODO: to write

CHAPTER 5
Introduction for companies

TODO: to write

Chapter 6
Frequently Asked Questions

6.1. General questions

What is Duckietown?

Duckietown is a low-cost educational and research platform.

Is Duckietown free to use?

Yes. All materials are released according to an open source license.

Is everything ready?

Not quite! Please sign up to our mailing list to get notified when things are a bit more ready.

How can I start?

See the next section, Getting started.

How can I help?

If you would like to help actively, please email duckietown@mit.edu.

6.2. FAQ by students / independent learners

I want to build my own Duckiebot. How do I get started?

TODO: to write

6.3. FAQ by instructors

How large a class can it be? I teach large classes.

TODO: to write

What is the budget for the robot?

TODO: to write

I want to teach a Duckietown class. How do I get started?

Please get in touch with us at duckietown@mit.edu. We will be happy to get you started and sign you up to the Duckietown instructors mailing list.

6.4. FAQ by researchers

TODO: to write

Part 2
How to contribute

Chapter 7
Contributing to this documentation

7.1. Where the documentation is

All the documentation is in the repository duckietown/duckuments.

The documentation is written as a series of small files in Markdown format.

It is then processed by a series of scripts to create this output:

- a publication-quality PDF;
- an online HTML version, split in multiple pages and with comments boxes.

7.2. Editing links

The simplest way to contribute to the documentation is to click any of the "✎" icons next to the headers.

They link to the "edit" page in Github. There, one can make and commit the edits in only a few seconds.

7.3. Comments

In the multiple-page version, each page also includes a comment box powered by a service called Disqus. This provides a way for people to write comments with a very low barrier. (We would periodically remove the comments.)

7.4. Compiling the documentation

TODO: Write instructions - it's "make all" but the dependencies are complicated.

7.5. Deploying the documentation

TODO: Write instructions

Chapter 8
Features of the documentation writing system

8.1. Embedded LaTeX

You can use LaTeX math, environment, and references. For example, take a look at

$$x^2 = \int_0^t f(\tau)\,\mathrm{d}\tau$$

or refer to Proposition 1.

Proposition 1. (Proposition example) This is an example proposition: $2x = x + x$.

The above was written as in Figure 1.

```
You can use $\LaTeX$ math, environment, and references.
For example, take a look at

\[
    x^2 = \int_0^t f(\tau)\ \text{d}\tau
\]

or refer to [](#prop:example).

\begin{proposition}[Proposition example]\label{prop:example}
This is an example proposition: $2x = x + x$.
\end{proposition}
```

Figure 1. Use of LaTeX code.

TODO: other LaTeX features supported

8.2. Other interesting features

TODO: to write

Part 3
Modeling

TODO:

Chapter 9
Kinematics of Duckiebot

TODO:

[1] Liam Paull, Jacopo Tani, Heejin Ahn, Javier Alonso-Mora, Luca Carlone, Michal Cap, Yu Fan Chen, Changhyun Choi, Jeff Dusek, Daniel Hoehener, Shih-Yuan Liu, Michael Novitzky, Igor Franzoni Okuyama, Jason Pazis, Guy Rosman, Valerio Varricchio, Hsueh-Cheng Wang, Dmitry Yershov, Hang Zhao, Michael Benjamin, Christopher Carr, Maria Zuber, Sertac Karaman, Emilio Frazzoli, Domitilla Del Vecchio, Daniela Rus, Jonathan How, John Leonard, and Andrea Censi. **Duckietown: an open, inexpensive and flexible platform for autonomy education and research.** In *IEEE International Conference on Robotics and Automation (ICRA)*. Singapore, May 2017. pdf

[2] Jacopo Tani, Liam Paull, Maria Zuber, Daniela Rus, Jonathan How, John Leonard, and Andrea Censi. **Duckietown: an innovative way to teach autonomy.** In *EduRobotics 2016*. Athens, Greece, December 2016. pdf