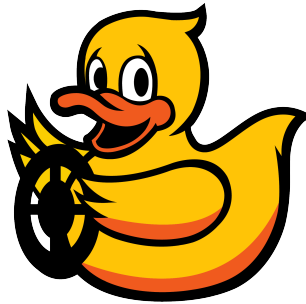




The Duckietown Book



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

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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

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

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 Papis, 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](#)