TECHNISCHE UNIVERSITÄT
CHEMNITZ

Title of the thesis

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DISSERTATION ZUR ERLANGUNG DES AKADEMISCHEN GRADES

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Abstract

Abstract of the thesis.

1 Introduction

1.1 First subsection

References: Scholl et al. (2022) showed that XXX (Vitay, 2017).

Cross-references: See Figure 1.1, Equation 1.1, Listing 1.1, Section 1.2 and Chapter 4.
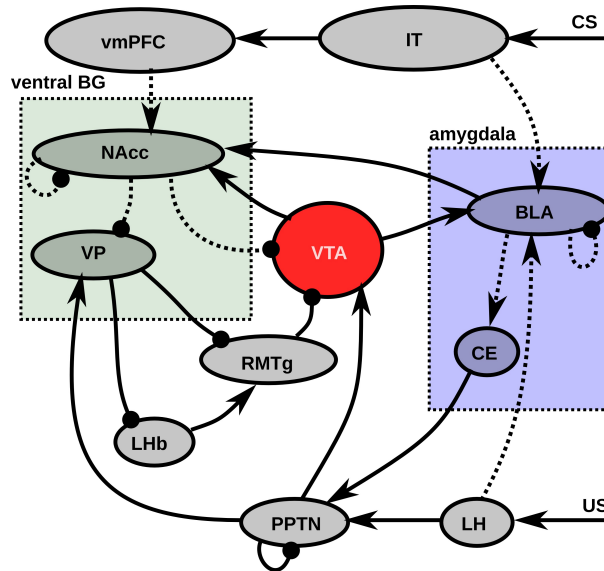

Figure 1.1: Afferent system to VTA. (Vitay, 2017)

Equations:

$$\tau \frac{dx_j(t)}{dt} + x_j(t) = \sum_i w_{ij}^{in} r_i^{in}(t) + g \sum_{i \neq j} w_{ij}^{rec} r_i(t) \tag{1.1}$$

1.2 Second subsection

Admonitions:

> **i** Nota Bene
>
> Important information.

Code snippets:

Listing 1.1 Simple EI network in ANNarchy.

```python
import numpy as np
import ANNarchy as ann

P = ann.Population(geometry=1000, neuron=ann.Izhikevich)
E = P[:800] ; I = P[800:]

EI = ann.Projection(pre=E, post=P, target='exc')
EI.connect_all_to_all(weights=ann.Uniform(0.0, 0.5))

IE = ann.Projection(pre=I, post=P, target='inh')
IE.connect_all_to_all(weights=ann.Uniform(0.0, 1.0))

ann.compile()

ann.simulate(1000.0, measure_time=True)
```

2 State of the art

3 Methods

4 Results

5 Discussion

References

Scholl, C., Baladron, J., Vitay, J., and Hamker, F. H. (2022). Enhanced habit formation in Tourette patients explained by shortcut modulation in a hierarchical cortico-basal ganglia model. *Brain Structure and Function*. doi:10.1007/s00429-021-02446-x.

Vitay, J. (2017). On the role of dopamine in motivated behavior: A neuro-computational approach. Available at: https://julien-vitay.net/publication/vitay2017/.