

# Using GANs to optimize Pose Estimation on Art Collections

Tristan Verheecke

Student number: 20043518

Supervisors: Prof. dr. ir. Dieter De Witte, Prof. dr. Steven Verstockt  
Counsellor: Kenzo Milleville

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# Preface

I've been interested in Art my entire life. In fact, I've a degree in the Fine Arts from LUCA School of Arts. There, I was known for my technical ability and one of my professors at the time asked me why I didn't do anything with that in my artworks. That remark has since stuck with me and was part of my motivation to apply for readmission for my Master of Science. With all the advancements in AI, I started thinking more and more about doing work with that. Like Matisse and Turner, I'm not satisfied with the tools available, but want to create my own.

It was therefor to my delight that I was able to work on this thesis which has provided me the opportunity to acquire more insight in the subject. I would like to thank my supervisors Dieter De Witte and Steven Verstockt for this wonderful opportunity, and my counsellor Kenzo Milleville for his great guidance. As well as all the other people at IDLab for their feedback. I also want to thank Karine Lacaracina, Lies Van De Cappelle and the other people at RMFAB for providing help with the artistic sensibilities of the thesis.

Enjoy the read,

Tristan Verheecke

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## I. INTRODUCTION

This document is a model and instructions for  $\LaTeX$ . Please observe the conference page limits.

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- Use a zero before decimal points: “0.25”, not “.25”. Use “cm<sup>3</sup>”, not “cc”.)

### C. Equations

Number equations consecutively. To make your equations more compact, you may use the solidus ( / ), the exp function, or appropriate exponents. Italicize Roman symbols for quantities and variables, but not Greek symbols. Use a long dash rather than a hyphen for a minus sign. Punctuate equations with commas or periods when they are part of a sentence, as in:

$$a + b = \gamma \quad (1)$$

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“Eq. (1)” or “equation (1)”, except at the beginning of a sentence: “Equation (1) is . . .”

#### D. *L<sup>A</sup>T<sub>E</sub>X*-Specific Advice

Please use “soft” (e.g., `\eqref{Eq}`) cross references instead of “hard” references (e.g., (1)). That will make it possible to combine sections, add equations, or change the order of figures or citations without having to go through the file line by line.

Please don’t use the `{eqnarray}` equation environment. Use `{align}` or `{IEEEeqnarray}` instead. The `{eqnarray}` environment leaves unsightly spaces around relation symbols.

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- The word “data” is plural, not singular.
- The subscript for the permeability of vacuum  $\mu_0$ , and other common scientific constants, is zero with subscript formatting, not a lowercase letter “o”.
- In American English, commas, semicolons, periods, question and exclamation marks are located within quotation marks only when a complete thought or name is cited, such as a title or full quotation. When quotation marks are used, instead of a bold or italic typeface, to highlight a word or phrase, punctuation should appear outside of the quotation marks. A parenthetical phrase or statement at the end of a sentence is punctuated outside of the closing parenthesis (like this). (A parenthetical sentence is punctuated within the parentheses.)
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- Do not use the word “essentially” to mean “approximately” or “effectively”.

- In your paper title, if the words “that uses” can accurately replace the word “using”, capitalize the “u”; if not, keep using lower-cased.
- Be aware of the different meanings of the homophones “affect” and “effect”, “complement” and “compliment”, “discreet” and “discrete”, “principal” and “principle”.
- Do not confuse “imply” and “infer”.
- The prefix “non” is not a word; it should be joined to the word it modifies, usually without a hyphen.
- There is no period after the “et” in the Latin abbreviation “et al.”.
- The abbreviation “i.e.” means “that is”, and the abbreviation “e.g.” means “for example”.

An excellent style manual for science writers is [7].

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**The class file is designed for, but not limited to, six authors.** A minimum of one author is required for all conference articles. Author names should be listed starting from left to right and then moving down to the next line. This is the author sequence that will be used in future citations and by indexing services. Names should not be listed in columns nor group by affiliation. Please keep your affiliations as succinct as possible (for example, do not differentiate among departments of the same organization).

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*a) Positioning Figures and Tables:* Place figures and tables at the top and bottom of columns. Avoid placing them in the middle of columns. Large figures and tables may span across both columns. Figure captions should be below the figures; table heads should appear above the tables. Insert figures and tables after they are cited in the text. Use the abbreviation “Fig. 1”, even at the beginning of a sentence.

TABLE I  
TABLE TYPE STYLES

| Table Head | Table Column Head            |         |         |
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|            | Table column subhead         | Subhead | Subhead |
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<sup>a</sup>Sample of a Table footnote.



Fig. 1. Example of a figure caption.

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#### ACKNOWLEDGMENT

The preferred spelling of the word “acknowledgment” in America is without an “e” after the “g”. Avoid the stilted expression “one of us (R. B. G.) thanks ...”. Instead, try “R. B. G. thanks ...”. Put sponsor acknowledgments in the unnumbered footnote on the first page.

#### REFERENCES

Please number citations consecutively within brackets [1]. The sentence punctuation follows the bracket [2]. Refer simply to the reference number, as in [3]—do not use “Ref. [3]” or “reference [3]” except at the beginning of a sentence: “Reference [3] was the first ...”

Number footnotes separately in superscripts. Place the actual footnote at the bottom of the column in which it was cited. Do not put footnotes in the abstract or reference list. Use letters for table footnotes.

Unless there are six authors or more give all authors’ names; do not use “et al.”. Papers that have not been published, even if they have been submitted for publication, should be cited as “unpublished” [4]. Papers that have been accepted for publication should be cited as “in press” [5]. Capitalize only the first word in a paper title, except for proper nouns and element symbols.

For papers published in translation journals, please give the English citation first, followed by the original foreign-language citation [6].

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# Introduction

One hundred years ago, Marcel Duchamp submitted his work 'Fountain' for an exhibition of the Society of Independent Artists. With this, he forever changed how art is thought about. He forced people to re-examine the question: "What is art?", and exactly that has now become the question in AI art related work. For Style Transfer, there's a difference made between the content and the style of the artwork. How accurate is this? In cubism, the content and the style are very intertwined. The style only works with multiple points-of-views of the content. Other movements abandon content entirely, like in Constructivism, or, the content is something very specific, like the metaphysical in abstract art. That each movement defines for itself what art is is not missed to conceptual artists, like Kosuth, who argues that art is its own definition. Art after Philosophy Is it then sensible to create portraits in an abstract style? Not that this isn't being tried, e.g Willem Cole. ... The ability to be contradictory.

Does the algorithm really need to be fast? No

# 1

## Titel van het eerste hoofdstuk

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### 1.1 Sectie titel

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## 1 Titel van het eerste hoofdstuk

Tabel 1.1: Overzicht resource-allocatieschema's

A=Algoritme, P=Protocol, F=Framework S=Simulator, C=Cloud, ILP=Integer Linair Programming, GH = Greedy Heuristic, SBP=Stochastic Bin Packing, MINLP=Particle swarm, RR=Round-Robin, SA=Simulated Annealing, SMT=Satisfiability Module Theory, FFD=First Fit Decreasing, MI(N)=Mixed Integer (Non-), SPLE=Software Product Line Engineering, L=Lijst, G=Graaf, B=Boom, FN=Fysieke node, Mig=Migraties, (?)=Niet vermeld

| Naam                  | Jaar | Type     | A   F   P | Invoer     | Uitvoer      | Getest |
|-----------------------|------|----------|-----------|------------|--------------|--------|
| Alicherry et al. [? ] | 2012 | k-snedes | A         | G          | par{G}       | S      |
| MCRVMP [? ]           | 2012 | ILP & GH | A         | B{netwerk} | VM-plaatsing | C      |

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In Tabel 1.1 wordt een overzicht weergegeven ...

## 1 Titel van het eerste hoofdstuk

1.2 Sectie titel

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# 2

## Titel tweede hoofdstuk

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## 2 Titel tweede hoofdstuk

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## 2 Titel tweede hoofdstuk

### NovaServers.boot\_and\_delete\_server (52.228s)

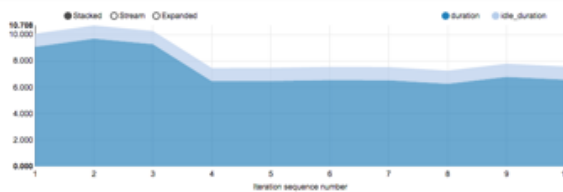
Boot and delete a server.

Overview Details Input task

Load duration: 41.810 s Full duration: 52.228 s Iterations: 10 Failures: 0 Started at: 2017-05-17T11:22:05

#### Total durations

| Action             | Min (sec) | Median (sec) | 90%ile (sec) | 95%ile (sec) | Max (sec) | Avg (sec) | Success | Count |
|--------------------|-----------|--------------|--------------|--------------|-----------|-----------|---------|-------|
| nova.boot_server   | 4.542     | 4.895        | 7.442        | 7.584        | 7.748     | 5.596     | 100.0%  | 10    |
| nova.delete_server | 2.861     | 2.734        | 2.959        | 3.006        | 3.042     | 2.789     | 100.0%  | 10    |
| total              | 6.376     | 6.514        | 9.321        | 9.519        | 9.798     | 7.381     | 100.0%  | 10    |



### NovaServers.boot\_and\_delete\_server [2] (154.889s)

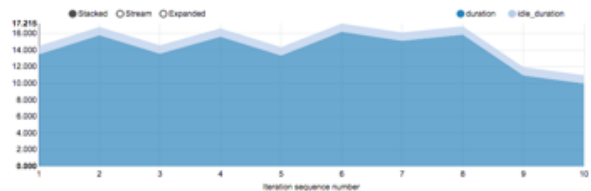
Boot and delete a server.

Overview Details Input task

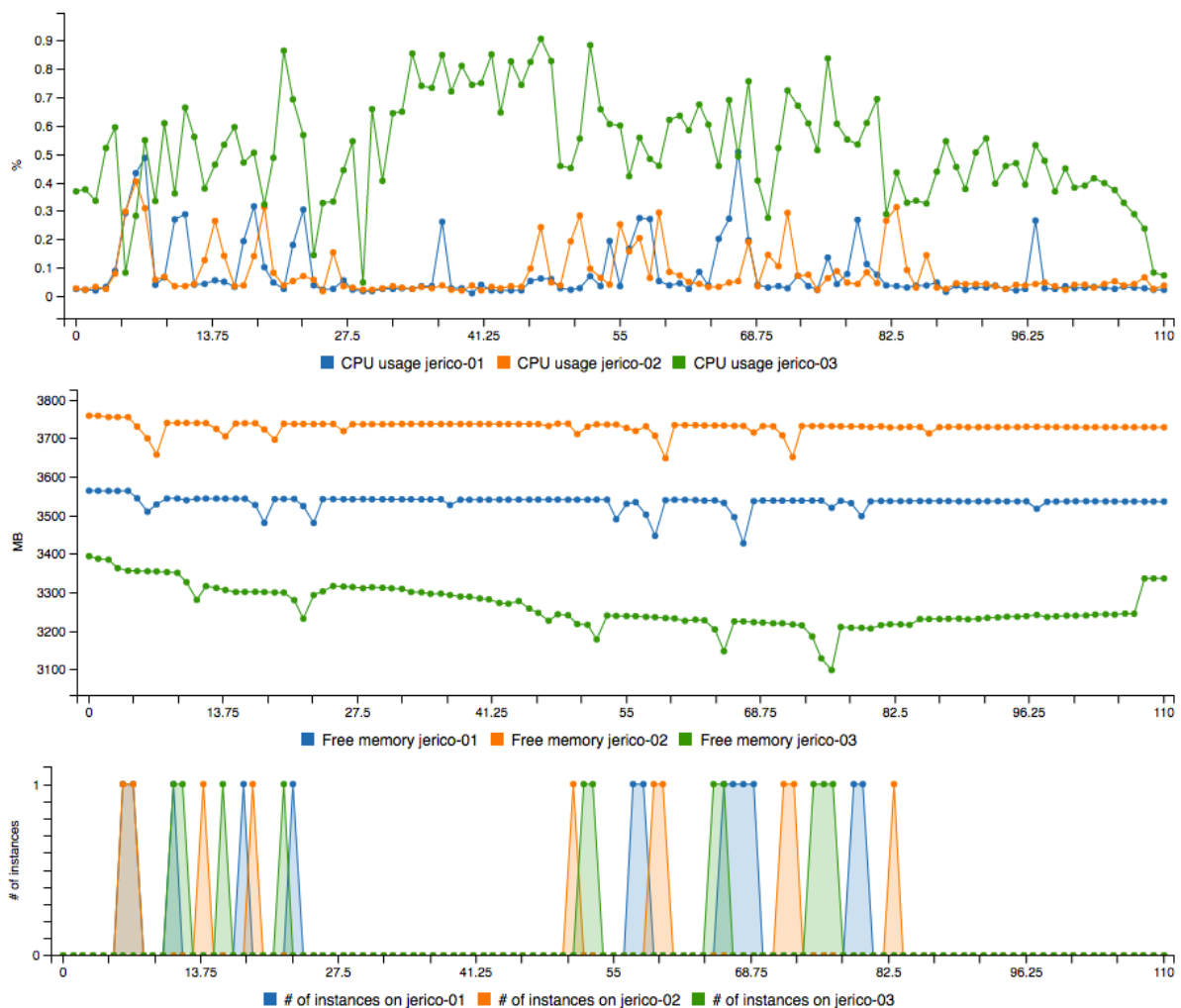
Load duration: 77.533 s Full duration: 154.889 s Iterations: 10 Failures: 0 Started at: 2017-05-17T11:23:00

#### Total durations

| Action             | Min (sec) | Median (sec) | 90%ile (sec) | 95%ile (sec) | Max (sec) | Avg (sec) | Success | Count |
|--------------------|-----------|--------------|--------------|--------------|-----------|-----------|---------|-------|
| nova.boot_server   | 8.1       | 11.254       | 11.868       | 12.819       | 13.772    | 10.934    | 100.0%  | 10    |
| nova.delete_server | 2.862     | 3.112        | 3.842        | 5.943        | 6.044     | 4.072     | 100.0%  | 10    |
| total              | 9.982     | 14.36        | 15.912       | 18.064       | 19.815    | 14.906    | 100.0%  | 10    |



(a) Uitvoer van Rally



(b) Uitvoer van de monitorapplicatie

Figuur 2.1: Evaluatie met Rally - Resultaten

# 3

## Titel derde hoofdstuk

Vul aan.

Nulla ac nisl. Nullam urna nulla, ullamcorper in, interdum sit amet, gravida ut, risus. Aenean ac enim. In luctus. Phasellus eu quam vitae turpis viverra pellentesque. Duis feugiat felis ut enim. Phasellus pharetra, sem id porttitor sodales, magna nunc aliquet nibh, nec blandit nisl mauris at pede. Suspendisse risus risus, lobortis eget, semper at, imperdiet sit amet, quam. Quisque scelerisque dapibus nibh. Nam enim. Lorem ipsum dolor sit amet, consectetur adipiscing elit. Nunc ut metus. Ut metus justo, auctor at, ultrices eu, sagittis ut, purus. Aliquam aliquam.

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### 3.1 Sectie titel

Vul aan.

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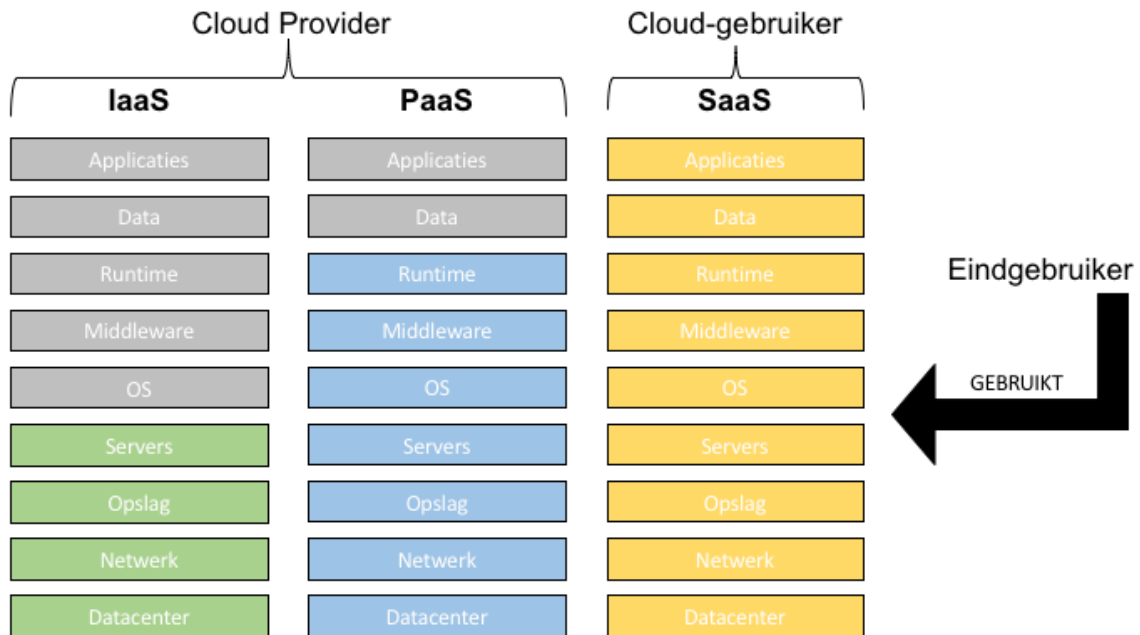
Sed eleifend, eros sit amet faucibus elementum, urna sapien consectetur mauris, quis egestas leo justo non risus. Morbi non felis ac libero vulputate fringilla. Mauris libero eros, lacinia non, sodales quis, dapibus porttitor, pede. Class aptent taciti sociosqu ad litora torquent per conubia nostra, per inceptos hymenaeos. Morbi dapibus mauris condimentum nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Etiam sit amet erat. Nulla varius. Etiam tincidunt dui vitae turpis. Donec leo. Morbi vulputate convallis est. Integer aliquet. Pellentesque aliquet sodales urna.

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### 3.2 Sectie titel2

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Figuur 3.1: Cloudstakeholders met de bijhorende cloudvorm.

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Voorbeeld figuur.

## Subtitel

Vul aan

### 3.2.1 Functie is\_isbn

Voorbeeld listing.

```
def is_isbn(isbn: str) -> bool:
    if not type(isbn) is str:
        return False
```

```
if len(isbn) != 10:
    return False
if not isbn[:9].isdigit():
    return False
if not isbn[9] in "0123456789X":
    return False
som = 0
for i in range(9):
    cijfer = int(isbn[i])
    som += (i + 1) * cijfer
if isbn[9] == "X":
    laatste_cijfer = 10
else:
    laatste_cijfer = int(isbn[9])
return laatste_cijfer == som % 11
```

Listing 1: Functie is\_isbn

# Conclusie

Vul aan.

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

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## Ethische en maatschappelijke reflectie

Vul aan.

Meer informatie kan je opzoeken op <https://www.sdgs.be/nl/sdgs>

Nam dui ligula, fringilla a, euismod sodales, sollicitudin vel, wisi. Morbi auctor lorem non justo. Nam lacus libero, pretium at, lobortis vitae, ultricies et, tellus. Donec aliquet, tortor sed accumsan bibendum, erat ligula aliquet magna, vitae ornare odio metus a mi. Morbi ac orci et nisl hendrerit mollis. Suspendisse ut massa. Cras nec ante. Pellentesque a nulla. Cum sociis natoque penatibus et magnis dis parturient montes, nascetur ridiculus mus. Aliquam tincidunt urna. Nulla ullamcorper vestibulum turpis. Pellentesque cursus luctus mauris.

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## Conclusie

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## **Bijlagen**

## Bijlage 1

Toelichting bijlage.

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## Bijlage 2

Toelichting bijlage.

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