

CURRICULUM VITAE

Koen Deschacht



General information

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Address Sint-Michielstraat 23.5
BE-2000 Antwerpen, Belgium

Education

Jan. 2006 - May 2010 Doctor in Engineering, computer science (machine learning specialization)
Katholieke Universiteit Leuven
Sept. 2001 - Sept. 2005 Master in informatics (magna cum laude)
Katholieke Universiteit Leuven

Work experience

Mar. 2020 - present Machine learning engineer and full stack developer, Give a Day
Oct. 2019 - Mar. 2020 Full stack developer, Toptal
Nov. 2018 - Jan. 2021 Machine learning engineer and full stack developer, Stepwise, Belgium
Jan. 2017 - Nov. 2018 Machine learning engineer and blockchain developer, Cegeka, Belgium
Dec. 2015 - Nov. 2016 CTO and machine learning engineer, ScriptBook NV, Belgium
July 2015 - Nov. 2015 Machine learning engineer, NoisyChannels, Belgium
Apr. 2015 - July 2015 Web developer, Crelan, Belgium
Apr. 2014 - Aug. 2014 Founder and full stack developer, Terashare, <http://terashare.net>
Apr. 2012 - Apr. 2014 Full stack developer, Foreach bvba, Belgium
Aug. 2011 - Apr. 2012 Technical lead and data scientist, Cult, San Francisco, US
Jan. 2006 - May 2011 Postdoctoral researcher, Katholieke Universiteit Leuven, Belgium
Sep. 2005 - Jan. 2006 Research assistant, Katholieke Universiteit Leuven, Belgium
Feb. 2004 - present Member of the board, Verbal Vision vzw, Belgium
Aug. 2001 - Nov. 2003 Web developer, Verbal Vision vzw, Belgium

for a complete list of projects, see appendix 1

Technical skills

Applications Data science and machine learning: data collection, feature engineering, classification, prediction and building unsupervised models.
Web: backend, fronted, single page JavaScript applications, REST API's

Programming languages Java (10 yrs), JavaScript and NodeJS (6 yrs), HTML and CSS (6 yrs), Python (2 yrs), Rust (1 yr), Objective C (0.5 yrs), C# (1 yr)

Frameworks sklearn, rustlearn, Mallet, Nuxt, Angular, Vue.js, Hyperledger, Ethereum, Apache Solr, numpy, Spring MVC, Xamarin, Flask micro web framework

Databases MySQL, MS SQL, Oracle SQL, Apache Cassandra

Personal skills

Experience in developing and implementing complex algorithms such as machine learning, developing blockchain solutions, low latency on-device machine learning, crawling large amounts of web data, building a high performance key-value store, generating social recommendations, relaying UDP traffic and performing NAT hole punching.

Passionate software developer fluent in java, javascript and python with the ability to learn new languages and frameworks quickly.

Proven track record in achieving deliverables and honouring deadlines, with experience in more than 12 software projects and two 4-year scientific research projects.

Good communication skills and experience in working collaboratively in teams, with one year experience as CTO in ScriptBook and one year experience as technical lead in Foreach.

Languages

Dutch Mother tongue

English Fluent

French Sufficient

References

Jan De Bleser (co-founder Terashare)

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Jan Nuyens (CEO of Foreach)

+32 3 290 79 11, St-Bartholomeusstraat 130, BE-2170 Merksem, Belgium

Gon Zifroni (founder Cult)

+1 415 400 60 89, 1175 Folsom Street, San Francisco, CA 94103, US

Prof. Marie-Francine Moens (head of the LIIR research group)

+32 16 32 53 83, Celestijnenlaan 200A, BE-3001 Leuven, Belgium

Ingrid Tiggelovend (chair of Verbal Vision vzw)

+32 486 67 83 99, Maria Theresialei 38, BE-2930 Brasschaat, Belgium

Hobbies

Diction & declamation, sailing, marathon running, bicycle touring (July to Dec. 2010: bicycle trip Belgium-Iran-Belgium)

APPENDIX 1: PAST PROJECTS

Note: projects marked with § have been performed while employed at Cegeka, marked with * have been performed while employed at Foreach bvba and marked with ° have been performed while employed at Toptal.

Give a Day March 2020 to June 2021

Give a Day is a start-up in Belgium that connects volunteers to non-profit organisations.

Position	Full stack developer
Context of the project	Give a Day needed to transition their MVP in CodeIgniter (PHP) to a SPA framework in order to offer a more responsive UI and decrease the effort for the development of new features.
Team	Project manager and 3 full stack developers
Achievements	We developed a responsive application with a modern look-and-feel that received a lot of praise from our customers. The new application integrates planning, communication and the management of vacancies and can be used as a fully fledged CRM to manage volunteers.
Tasks and solutions	<ul style="list-style-type: none">✓ Frontend: <i>nuxt + bootstrap Vue</i>✓ Backend: <i>nodejs + MariaDB</i>

BCG – GAMMA March 2020 °

BCG – Gamma is a global data science consulting company

Position	Full stack developer
Context of the project	A client in the telecommunications sector wanted to increase their customer acquisition rate with a predictive model that could single out promising prospects.
Team	Project manager, 3 full stack developers, data scientist
Achievements	We developed an easy-to-use application for call centre employees that ranks prospects automatically based on previous interactions.
Tasks and solutions	<ul style="list-style-type: none">✓ Frontend: <i>Vue</i>✓ Backend: <i>Django + MYSQL</i>✓ Predictive model: <i>Scikit-learn</i>

Stepwise November 2018 to February 2020

Stepwise is a start-up in Belgium that develops a tailored training program for novice and experienced runners.

Position	Founder, machine learning engineer and full stack developer
Team	Solo
Achievements	I developed two AI models, one that creates a personalized training program for a runner based on their personal characteristics, and one low-latency, on-device model that would estimate the actual speed and position of the runner, even when faced with spotty GPS and quick speed changes.
Tasks and solutions	<ul style="list-style-type: none">✓ Mobile apps: <i>Vue + Java + Objective C + Rust</i>✓ Backend: <i>Java + MYSQL</i>✓ Machine learning models: <i>Custom machine learning model in Java and Rust</i>

COLDSTART October 2019 ◦

ColdStart is a AI start-up that helps people to manage their online personal data.

Position	Frontend developer
Team	One frontend developer, one backend developer
Achievements	In only two weeks we developed the first MVP for ColdStart, allowing them to rapidly gather feedback from their test users.
Tasks and solutions	<ul style="list-style-type: none">✓ Frontend: <i>Vue</i>✓ Backend: <i>Django + MYSQL</i>

COLRUYT July 2018 to October 2018 §

Colruyt is a supermarket chain in Belgium with a focus on healthy and environmental friendly foodstuffs.

Position	Functional analyst and full stack developer
Context of the project	In recent years Colruyt has focused on reducing their carbon footprint. A solution was needed to accurately compute an "eco-score" for a large number of foodstuffs, taking into account the carbon footprint of the entire chain, from farmers to supermarkets.
Team	Project manager, functional analyst, 4 full stack developers
Achievements	We developed an application that allowed Colruyt personnel to manage the complex footprint data associated with food production, reusing and augmenting data where possible.
Tasks and solutions	<ul style="list-style-type: none">✓ Frontend: <i>Angular</i>✓ Backend: <i>Java + Oracle SQL</i>

CONSORTIUM OF SOCIAL SECRETARIATS March 2018 to June 2018 §

Position	Functional analyst and project proposal writer
Context of the project	In Belgium various functions of payroll are handled by 'social secretariats'. A consortium of social secretariats wanted to develop a shared back office to administer these functions.
Team	2 proposal writers, 2 project managers, 5 point of contacts of the social secretariats
Achievements	Combining the requirements from all consortium members, we created a multi-year project proposal that employed a low-code platform to substantially reduce the cost and improved the speed of delivery of the solution.

MICROSOFT December 2017 to February 2018 §

Position	Blockchain developer
Context of the project	Microsoft has developed a new cloud offering, App Builder, which will allow business stakeholders to rapidly prototype blockchain applications using a variety of blockchain technologies. Cegeka developed, alongside Microsoft developers, multiple modules of this new cloud package.
Team	2 business analysts, 2 developers
Achievements	We developed an easy-to-use wizard in Xamarin (Android, IOS, UWP) to fully specify a blockchain application, and automatically generate a solidity contract or enterprise smart contract and the necessary configuration files to deploy these contracts to App Builder.
Tasks and solutions	

- ✓ Develop wizard UI: *C# + Xamarin Forms*
- ✓ Generate Ethereum contracts: *solidity*
- ✓ Generate enterprise smart contracts: *C#*

KPMG NETHERLANDS June 2017 to December 2017 §

KPMG is a professional service company and one of the Big Four auditors.

Position	Machine learning engineer and blockchain developer
Context of the project	When managing and auditing SPV's, multiple sources of financial transactions need to be reconciled. This is a labour intensive process, prone to errors.
Team	1 data scientist / blockchain developer, 1 functional analyst, 1 business analyst
Achievements	We developed an application that combines an artificial intelligence algorithm with a blockchain to drastically reduce this manual work and to increase ease of auditing.
Tasks and solutions	<ul style="list-style-type: none"> ✓ Store transactions on blockchain: <i>Corda</i> ✓ Automatic reconciliation of transactions: <i>Java + custom clustering algorithm</i> ✓ Web-interface to view balance sheet and audit transactions: <i>Angular 4 + Java</i>

AMSTERDAM TRADE BANK March 2017 to May 2017 §

Amsterdam Trade Bank is a Dutch bank that focuses on trade financing for companies wishing to do business in Russia and former Soviet states.

Position	Blockchain developer
Context of the project	When performing international trade tracking goods and their financing requires trust between the different parties. Blockchain technologies can partially alleviate this need for trust.
Team	1 business analyst, 1 functional analyst, 3 developers
Achievements	We developed an application that allowed for the tracking of goods from producer to consumer, including the financing of the goods.
Tasks and solutions	<ul style="list-style-type: none"> ✓ Frontend: <i>Angular 2 application</i> ✓ Backend: <i>Java + web3j</i> ✓ Blockchain: <i>Ethereum</i>

KBC January 2017 to March 2017 §

KBC is one of the largest bank and insurance companies in Belgium and active in Central and Eastern Europe.

Position	Web developer
Context of the project	When a customer buys a new car using a car loan from KBC, a large amount of paperwork is involved between the customer, the car salesperson and KBC. A proof of concept explored how a blockchain solution could reduce this paperwork.
Team	1 functional analyst, 2 web developers, 1 blockchain developer
Achievements	We developed an application that allowed for the easy tracking of the car sale and insurance by the different parties
Tasks and solutions	<ul style="list-style-type: none"> ✓ Frontend: <i>Angular 2</i> ✓ Backend: <i>Nodejs + express</i> ✓ Blockchain: <i>Hyperledger</i>

SCRIPTBOOK December 2015 to November 2016

ScriptBook is a start-up that develops text analysis algorithms to forecast the commercial and critical success of movies based on a multi-level analysis of the screenplay.

Position	CTO and machine learning engineer
Context of the project	An existing proof-of-concept was drastically improved to take into account a large number of different models analysing the screenplay, and to produce accurate, reliable and repeatable forecasts. The Angular user interface was redeveloped from the ground up.
Team	CTO, 1 web developer, 4 data scientists
Achievements	In 1 year we developed a forecasting system that outperforms all other automatic systems and human experts on predicting the US box office. Product is currently being tested by a major US studio, a US film funds and a European distributor.
Tasks and solutions	<ul style="list-style-type: none">✓ Crawl a large number of websites: <i>python + auto scaling AWS instances</i>✓ Analyse the text of the screenplay: <i>python + scikit-learn + nltk + lda</i>✓ Generate forecasts: <i>python + numpy + scikit-learn</i>✓ Show and filter results in web-interface: <i>HTML 5 + angular JS + flask</i>

NOISYCHANNELS July 2015 to November 2015

NoisyChannels is a start-up that develops text analysis algorithms to assist knowledge workers in operational processes.

Position	data scientist and full stack developer
Context of the projects	development of proof-of-concept of automatic classification algorithms of customer emails based on an of the content and attachments development of a crawler and automatic classifier of news messages for social secretariats
Team	1 business analyst, 1 data scientist, 1 developer
Achievements	in 3 months we developed two separate solutions for two of the biggest social secretariats in Belgium and one large insurance company, resulting in the first sale for NoisyChannels
Tasks and solutions	<ul style="list-style-type: none">✓ Crawl a large number of websites: <i>java in an azure cloud environment</i>✓ Filter websites based on annotations of customers: <i>java + Stanford CoreNLP</i>✓ Show and filter results in web-interface: <i>HTML 5 + angular JS + twitter bootstrap</i>✓ Parse customer emails and attachments: <i>java + tesseract OCR + apache PDFBox</i>✓ Classify emails: <i>java + Stanford CoreNLP</i>

CRELAN ONLINE April 2015 to July 2015

Crelan is a retail bank and insurance company with over 1.700 employees and 430.000 customers in Belgium.

Position	web developer
Context of the project	development of the MIFID questionnaire in Crelan Online and Agent Portal

Team 4 developers, 3 functional analysts
Achievements joined team halfway in the project that was running late, but achieved deadline and managed to add several unbudgeted features
Tasks and solutions

- ✓ Add to existing website backend: *java + struts + Oracle RDBMS*
- ✓ Add to existing website frontend: *HTML5 + jquery*

TERASHARE.NET April 2014 to August 2014

Terashare is a P2P application that allows people to send large files for free. It uses the bittorrent protocol to send files reliably, fast and secure.

Position full-stack developer
Context of the project development of new application and website
Team 2 developers
Achievements successful launch, growing user base

Tasks and solutions

- ✓ Create website backend and REST api: *python + django + mysql*
- ✓ Create website frontend: *HTML5 + angular + jquery + twitter bootstrap*
- ✓ Create application for windows, mac en linux: *python + nsis for windows installer*
- ✓ Create NAT hole puncher and UDP relay servers: *python*

VOKA December 2013 to April 2014 *

VOKA (Vlaams netwerk van ondernemingen) is an employers' organization in Flanders, representing over 18.000 companies in Flanders and Brussels.

Position backend developer
Context of the project Improve speed and responsiveness of existing voka.be website
Team 3 backend developers
Achievements More than 10x average speed-up, loading of slowest pages went from 3 minutes to 2 seconds.

Technical methodology:

- ✓ Umbraco CMS + many custom .NET modules

RESTO.BE Juli 2013 to November 2013 *

Resto.be is the largest restaurant site in Belgium, with more than 3000 affiliated restaurants.

Position full-stack developer, scrum master
Context of the project expand existing website and search page with location based results.
Team 1 designer, 4 backend developers
Achievements project successfully finished on time. The new website gives users better search results by taking into account their current location.

Tasks and solutions

- ✓ Expand existing search engine to take into account the current location of the user, and to group results by location: *apache solr*
- ✓ Modify existing website to feature locations prominently: *java + spring*
- ✓ Modify existing REST api to return location information: *java + spring + MS SQL*

DE TIJD December 2012 to June 2013 *

'De Tijd' is a Belgian newspaper that focuses on business and economics.

Position	full-stack developer, technical lead
Context of the project	For the development of a new tablet app, we developed a REST API and modified the editorial website used by the journalists.
Team	1 frontend developer, 7 backend developers. We worked in close collaboration with a team of 4 developers from "In The Pocket", who developed the actual app for iOS and Android.
Achievements	Project successfully finished on time. The app was then considered by many the best tabled app for any newspaper in Belgium.
Tasks and solutions	<ul style="list-style-type: none">✓ Modify existing backend websites that allow journalists to write articles, select and add pictures and layout the articles and pages: <i>java + spring + thymeleaf + oracle SQL</i>✓ Create a new module to render articles to a subset of HTML5 to be passed to the app: <i>java + spring + thymeleaf + oracle SQL</i>✓ Create a REST API to server rendered articles, images and other assets: <i>java + spring</i>

RESTO.BE April 2012 to November 2012 *

Resto.be is the largest restaurant site in Belgium, with more than 3000 affiliated restaurants.

Position	front-end developer
Context of the project	New javascript app to streamline reservations for restaurants
Team	3 frontend developers
Achievements	Project successfully finished.
Tasks and solutions:	<ul style="list-style-type: none">✓ Create a REST api to access restaurant reservations: <i>java + spring + MS SQL</i>✓ Show reservations in app: <i>javascript + dojo</i>✓ Allow restaurant owners to assign individual reservations to tables: <i>javascript canvas</i>

CULT August 2011 to April 2012

Cult was a startup based in San Francisco that developed a location based social network, connecting people in a certain location (e.g. the Guggenheim museum) to other people in similar locations around the world.

Position	data scientist and full-stack developer
Context of the project	Development of backend, frontend and website for new social network.
Team	1 full-time developer, 2 part-time developers, 1 designer, led by founder
Achievements	app, website and REST API successfully finished under difficult circumstances.
Tasks and solutions:	<ul style="list-style-type: none">✓ Crawl and cluster locations from google maps: <i>java + cassandra</i>✓ Develop website: <i>HTML5 + javascript + python + django</i>✓ iOS app: <i>objective c</i>

APPENDIX 2: PATENTS AND SCIENTIFIC PUBLICATIONS

Patents

1. US Patent 2011/0119050. Method for the automatic determination of context-dependent hidden word distributions, Koen Deschacht and Marie-Francine Moens.
2. US Patent 61/546,409. Multilocal Implicit Social Networking, Gon Zifroni, Koen Deschacht and Yuval El-Hanany, filed on Oct 12, 2011.

Scientific publications

1. Deschacht, Koen and Moens, Marie-Francine (2012) The Latent Words Language Model, Computer Speech and Language, Elsevier. (in press)
2. Deschacht, Koen (2010) Weakly supervised methods for information extraction, PhD dissertation, K.U.Leuven.
3. Deschacht, Koen and Moens, Marie-Francine (2007) Text Analysis for Automatic Image Annotation. In Proceedings of the 45th Annual Meeting of the Association for Computational Linguistics.
4. Deschacht, Koen & Moens Marie-Francine (2009) Using the Latent Words Language Model for Semi-Supervised Semantic Role Labeling. In Proceedings of the 2009 Conference on Empirical Methods in Natural Language Processing.
5. Deschacht, Koen & Moens Marie-Francine (2009) The Latent Words Language Model. In Proceedings of the 18th Annual Belgian-Dutch Conference on Machine Learning.
6. Deschacht, Koen & Moens Marie-Francine (2008) Finding the Best Picture: Cross-Media Retrieval of Content. In C. Macdonald, I.Ounis, V. Plachouras & I. Ruthven (Eds.) Proceedings of the 30th European Conference on Information Retrieval. Lecture Notes in Computer Science 4956 (pp.539-546). Springer.
7. Deschacht, Koen, Moens, Marie-Francine and Robeyns, Wouter. (2007) Cross-Media Entity Recognition in Nearly Parallel Visual and Textual Documents, in Proceedings of the 8th RIAO conference on Large-Scale Semantic Access to Content (Text, Image, Video and Sound).
8. Poulisse, Gert-Jan, Moens, Marie-Francine, Dekens, Tomas & Deschacht, Koen (2010) News Story Segmentation in Multiple Modalities, Multimedia Tools and Applications.
9. Engels, Chris, Deschacht, Koen, Becker, Jan Hendrik, Tuytelaerts, Tinne, Van Gool, Luc & Moens, Marie-Francine (2010) Automatic Annotation of Unique Locations from Video and Text. In Proceedings of the British Machine Vision Conference 2010.
10. Arias, Javier, Deschacht, Koen & Moens, Marie-Francine (2009) Content Extraction from Multilingual Web Pages. In Aly R., Hauff, C. Hiemstra, D., Huybers, T. & De Jong, F. (Eds.), Proceedings of the 9th Dutch-Belgium Information Retrieval Workshop.
11. Deschacht, Koen and Moens, Marie-Francine (2006) Efficient Hierarchical Entity Classification Using Conditional Random Fields, Proc. o/t 2nd Workshop on Ontology Learning and Population.
12. Pham, Phi The, Deschacht, Koen & Moens, Marie-Francine (2008) Document Clustering with User Feedback. In Eduard Hoenkamp, Martine De Cock & Véronique Hoste (Eds.). Proceedings of the 8th Dutch-Belgium Information Retrieval Workshop (pp. 73-80).
13. Boiy, Erik, Deschacht, Koen & Moens Marie-Francine (2008) Learning Visual Entities and their Visual Attributes from Text Corpora. In Proceedings of the 5th International Workshop on Text-based Information Retrieval. IEEE Computer Society Press.
14. Boiy, Erik, Hens, Pieter, Deschacht, K. and Moens, Marie-Francine. (2007) Automatic Sentiment Analysis of On-line Text. In Proceedings of the 11th International Conference on Electronic Publishing, Openness in Digital Publishing: Awareness, Discovery & Access, June 13-15, 2007, Vienna Austria.
15. Vossen, Piek and Hoffman, Katja and De Rijke, Maarten and Tjong, Erik and Sang, Kim and Deschacht, Koen (2007) The Cornetto Database: Architecture and User-Scenarios, Proceedings of the 7th Dutch-Belgium Information Retrieval Workshop (DIR 2007).
16. Koen Deschacht and Marie-Francine Moens (2007) Text Analysis for Automatic Image Annotation, In Proceedings of the 19th Belgian-Dutch Conference on Artificial Intelligence (Dastani, M. and de Jong, E., eds.), pp. 260-267.
17. Deschacht, Koen and Moens, Marie-Francine (2006) Efficient Hierarchical Entity Classification Using Conditional Random Fields, 18th Belgian-Dutch Conference on Artificial Intelligence.