DOCTEUR INGÉNIEUR CIVIL

Specialized in Mathematical Programming (Machine Learning, optimization & control)

Personal Data

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Education

June 2004

- **Ph. D. in the field of mathematical engineering with a specialization in continuous optimization** at the faculty of polytechnics at the University of Brussels (ULB - Université Libre de Bruxelles), Belgium (obtained with the highest distinction)

Thesis : CONDOR: a constrained, non-linear, derivative-free parallel optimizer for continuous, high computing load, noisy objective functions.

June 2003

- degree of "**Diplôme d'Étude Approfondie (DEA) en Sciences Appliquées**" at the faculty of polytechnics at the University of Brussels (ULB - Université Libre de Bruxelles), Belgium

Final year project : I realized an unconstrained **optimizer** for continuous, high computing-load, objective function when the derivatives are not available.

June 1999

- degree of "**Ingénieur civil**" specialised in computer science at the faculty of polytechnics at the University of Brussels (ULB).

Final year project: I realized a multi-input multi-ouput fuzzy direct auto-adaptative controller with multiple step ahead prediction (**MSDAFC**). This controller was used for the FAMIMO european research project.

June 1992

- Secondary studies, Athénée Royal Ath, Belgium

Work experiences

May 2007-now

➢ **Founder of the "TIMi" company (Machine Learning – Big Data - Business Intelligence)**

I created the TIMi company. The objective of this company is to provide state-of-the-art analytics and advanced analytics tool for big data, predictive modeling, AI and Business-Intelligence. The tools from TIMi technically outperforms any other off-the-shelf commercially available predictive datamining tool for a fraction of their price. Please see the "Awards" section to know more about the tools from TIMi. To summarize: We are the best data scientists of Europe!

May 2007-now

➢ **Development of a machine learning software for the TIMi company (Machine Learning – Big Data - Business Intelligence)**

This application is named "TIMi". It has more than 1.000.000 lines of scientific code. It's coded in C, Assembler, JavaScript (Anatella script, angular.js, plotly.js), R, Python, Php and Qt4. TIMi is a suite of tools that covers all the steps required to accomplish a Machine Learning project:

- data preparation (database consolidation & cleaning),
- classification (binary and multi-class – ranking & profiling), regression using Automated Machine learning (Auto-ML) techniques.
- 3D real-time multivariate visualization and population segmentation.

These tools have been compared with other **large scale statistical analysis packages** (SAS, KNime, IBM, H2O, etc.) and give significantly higher quality results (higher accuracy) thanks to the usage of more advanced mathematics and high-quality implementations. The computation time of these tools is also a fraction (1/1000) of the computation time of other solutions.

The "TIMi Suite" was cited inside the very elitist report "*Advanced Analytic Quadrant 2016*" from the Gartner company. This places the "TIMi Suite" as a world-level leader in the Data Science field on the same level as other prestigious multinational companies such as: Oracle, Tibco, Mathworks, Salford system, etc.

I am the lead coder for the development of these tools. I was also the project leader for a large part of the development of the applications, supervising a team of 10 people. I designed the algorithms and the architecture of all the softwares.

May 2007-now

➢ **Development of a Big Data software for the TIMi company (Machine Learning – Big Data - Business Intelligence)**

The Big Data tool is named "Anatella". It's one component of TIMi. Anatella has been compared to many other ETL tools and is currently the fastest and the most scalable of all the Big Data tools available on the market. For example, it's several orders of magnitude faster than Spark and much more scalable and reliable. Anatella is also one of the only self-service ETL tool available on the market (everything is done with the mouse). This places TIMi at the forefront of the international Big Data/Analytical field.

May 2007-now

➢ **Development of a various "Big Data" and "Machine Learning" solutions for many private companies using TIMi as the analytical platform (Machine Learning – Big Data - Business Intelligence)**

Some examples:

- Since 2018, I am helping the data engineers from Snype to create a revenue-insurance solution for Governments. Every day, this solution receives and stores all the basic "raw" data from all the telecoms in the country. This solution computes the exact amount of the tax to pay to the state (based on the total monthly revenue of each telecom). These computations involve manipulating petabyte scale datasets. All the "Big Data" parts (computation and storage) are handled with Anatella (This is really a *BIG* Big Data project!).
- In October 2019, I helped the analytic team from Tom&Co to complete their "revenue insurance" tasks on data extracted from SAP (e.g. finding invoices that are erroneously paid twice).
- In August 2019, I analyzed data from the RTBF to create various dashboards (the predictive models for their recommendation system for their newsletter are still "work in progress").
- In march 2019, I created a data lake, many cross-sell models and a churn model for the Raiffeisen bank in Luxembourg.
- Since 2018, I am helping the data scientist team from JLL (Jones Lang Lasalle) in their various data science activities.
- In January 2018, I created many (all) cross-sell models for MTN Malawi in collaboration with DigiTata in Johannesburg, South Africa.
- Since 2015, I am helping the data scientist team from Partena Mut to create various churn models.
- Since 2010, I am helping the data scientist team from VOO/BeTV (Belgium) for all their analytics initiatives (e.g. to create churn models, cross-selling models and up-selling models and various simple BI/reporting projects).
- Since 2017, I am helping the data scientists from Glickman.eu to create all the cross-selling models for Makro Belgium.
- In September 2016, I developed machine learning models to analyze the wear in Michelin tires (in collaboration with Enovea, in France).
- Since 2016, I am supporting "Post.lu" (it's a telecom company) in the development of their churn and cross-selling models.
- Since 2015, I am supporting the EY Luxembourg team to use Anatella for their auditing activities: i.e. They validate the data in large XML files (FAIA files) that contains all the financial data from their customers (e.g. Amazon) (Big Data).
- Since 2015, I am supporting the data scientist team from the "Data Lab" from AXA (Belgium). Using TIMi, they created a vast data lake, many churn models, many cross-selling models and manage various BI projects. In July 2017, we analyzed the CREST30&40 product from AXA to predictive our much "cash out" there will be in the following months (this implied manipulating amount of more than 4 billions euros).
- In 2014, I helped the data miner team from PwC (PriceWater-HouseCoopers) to create a text mining solution to automatically classify documents (contracts) from the European Commission.
- In September 2014, I created churn models for the subscriptions to the newspaper "Le Soir" (owned by "Groupe Rossel").

- In 2010 and 2011, I created "Media Mix" models to optimize the investments in various medias (e.g. press, internet, billboards in the streets, billboards in the point-of-sales, etc) for: "La Lotterie Nationale", "Cofidis", "British American Tobacco", "Tropico", "Midas", etc.
- In 2013, I helped the data miners from Volvo cars to identify the causes of failures inside the batteries inside the Volvo cars. The same methodology has now been extended to other parts (inside Volvo cars and inside the machines inside Volvo's factories).
- In 2013, I helped the data miners from Delhaize to allocate in an optimal way the "price reduction coupons" to the customers that are the most likely to redeem them (this involved the creation of thousands of predictive models and the creation of a high-dimensional constrained discrete optimizer for the GAP).
- In 2014, I created many churn models for Colruyt (to detect when customers that will stop buying Wines, Soft Drinks, Meats, Bakeries, etc. at Colruyt).
- In 2012, I helped the data miners from GXLab (Russia), to create models to anticipate failure inside Submersible Petroleum Pumps in Siberia.
- In 2014, I helped the data miners from EagerAnalytics to create models to anticipate failure in heavy machinery (large cranes & trucks) from SANY (Internet of Things – IoT project).
- In 2011, creation of a generic analytical solution for telecoms: Starting from raw (binary) data, create an analytical data warehouse (this implies Big Data computations) and then create churn models (this implies machine learning computations). This solution has been deployed at MTN South Africa and Tigo Tanzania. This solution also forms the basic building block on top of which the data scientists from Riaktr created all their analytical solutions. An evolution of this solution is thus in production (through Riaktr) in over 30 different telecoms in Africa, Caribbean and Dubaï.

August 2008-July 2009

➢ **Development of a GPS application (like TOMTOM) for Punch Telematix**

I was in charge of the "Street Indexing" module and the "Road Snapping" module. I created from scratch a small embedded-DB engine where the street data are indexed using a structure named "PatTrie" that is similar to the "Bit Index" of the "SyBase IQ" database. This highly optimized indexing structure allows constant-time fuzzy match on the "street names" on the DB (independently of the size of the DB).

February 2008-August 2008

➢ **Development of a scientific application for analysis of "Small Light Scattering" for the Rheology Laboratory of the KUL**

The application includes FFT transformation and eigenvalues computation of large images (6000x6000). It was done inside the Qt4 framework.

July 2007 - February 2008

➢ **Consultant at Business&Decision Belgium (datamining)**

I was working as expert dataminer and statistician at B&D.

August 2005-May 2007

➢ **Research engineer in the Analysis of Large Social Networks (datamining)**

I developed a software that analyses large **social networks** based on mobile phone communication logs. The analysis includes **node clustering** and node

ranking inside the clusters. The softwares are based on **I/O efficient external memory** algorithms to be able to process large networks (2 TB). The objective is to extract from the network some indexes that could be used for marketing/profiling purposes.

April 2005-
July 2005

➢ **Research engineer in robust optimal control of batch processes (control)**

I worked for the IPCOS company to realize a software that computes the optimal set of parameters of a **hybrid PID controller** (including terms for feedback, feedforward and filtering) for a strongly **non-linear process**. The parameters are computed taking into account the full non-linearity of the batch process along the setpoint trajectory. **No linearity assumption** is made at any point. The final result is higher precision in the solution parameters. The parameters are computed using a special version of my optimizer (**CONDOR**) that is able to work with **non-differentiable non-linear constraints**. The constraints include different kind of stability margins (**mixed** L_2 / H_∞ **control**). On a first industrial computer benchmark (produced by **UCB**), CONDOR found an optimal set of parameters that reduces the tracking error to 0.1% of the currently implemented industrial solution while maintaining the same stability margins.

September 2004-
March 2005

➢ **Research engineer in KDD (machine learning - Knowledge Discovery in Databases)**

I worked for the WegenerDM/VADIS company. I realized alone a **datamining/scoring/profiling application** (named "rank") that is able to process vast amount of data (several Gigabytes) in a few minutes. The typical size of the tables that are analyzed is more than **10^8 lines and 10^5 columns**. This tools is still used today by WegenerDM to develop large **direct marketing campaigns** for a number of prestigious companies (Fortis, Citibank, Procter&Gamble, YvesRocher,...). All development on this tool is now aborted. This old tool is now completely outperformed by the new "TIM software suite" commercialised by the TIMi company.

June 2004-
August 2004

➢ **Research engineer in optimization of Dry Seals Designs (optimization)**

I worked shortly at the Computational Department of the **BURGMANN Industries** in Wolfratshausen, **Germany**. Burgmann produces currently nearly all high-technology seals in the **international market**. The **european community** wants to change this situation and open the seal market place to other companies. One way of reaching this goal is to publish a set of "standard seals designs" that can be used in a vast amount of applications. Once these designs are defined, many industries will be able to compete for the production of the seals. The final result is the opening of the seal market. The technical specifications of these "standard seals" must be carefully chosen because they will be used by **all manufacturers in Europe**. The optimal specifications of the "standard seals" were computed using my optimizer: **CONDOR**. The seal optimization process involves an objective function based on a **multi-physic simulation** of the seal. This simulation includes thermodynamic and plastic deformations of the seal combined with the fluid dynamics simulation of the gas in the leakage. The **objective function is** thus highly **non-linear, high-computing-load and undefined** on many points of the input space.

2000-2004 ➢ **Research engineer in optimization algorithms for continuous functions. (optimization)**

I worked on the **METHOD LTR European project** with the university of Florence. The goal of this project is to optimise the shape of turbo-machines. We run a simulation of the gas flow inside the turbine. Based on this simulation, we compute the quality of the shape. We iterate on different shapes until we find the best shape. My job was to write the **optimisation code** that chooses what's the next shape to try. I use **trust region method optimization** on **multivariate Lagrange interpolator** techniques. The final result is my optimizer: **CONDOR**.

1999-2000 ➢ **Research engineer in Fuzzy control (machine learning & non-linear identification and control**

I worked at the development of the **FAMIMO ESPRIT LTR European project** in collaboration with other European universities and SIEMENS Automotive. The research activities focus on two different areas. The development of new approaches in the area of **fuzzy identification and control**, and the implementation of a Matlab toolbox that will integrate all the techniques developed by the partners taking part in the project (see http://iridia.ulb.ac.be/~famimo/ or https://cordis.europa.eu/project/rcn/35885/factsheet/en).

1999-2000 ➢ **Research engineer in Real-Time image classification (machine learning)**

I worked on the GLAVERBEL project: a **real-time classifier** for the classification of glass defects (world première). This classifier is implemented as a modified TFTP server. It receives images from the **TCP/IP network**, computes the class, sends back the results to an **Oracle** Database and to the factory computer. Then, the factory computer decides how to cut the glass (commercial optimisation). The percentage of good classification is 94%.

December 1999 ➢ **Development of a pre-press application for the publishing industry (pre-press).**

I created a large java application called "**Advertedge**". This software processes postscript and PDF files to include gray marks on the edges of the pages. The final objective is to obtain a drawing on three sides of the book when it is closed. This application is currently used **all over the world** in the biggest printing factory (casterman, donelley,...).

June 1999 ➢ **Development of a time series prediction tool (machine learning)**
September 1999

This tool is currently used by D'IETEREN, one of the biggest Belgian car reseller for sales prediction. This tool is based on **Lazy Learning** techniques.

Papers & Book Chapter

Please note that a large part of my research results is currently owned by a private company (TIMi) and these research results are thus undisclosed since they are the subject of copyright protection. Only the free-of-rights research results are described below (and only those that have been published).

- Frank Vanden Berghen, CONDOR, a parallel, direct, constrained optimizer for high-computing-load, black box objective functions Proceeedings of the "Third ***MIT*** conference on Computational Fluid and Solid Mechanics", Elsevier, june 14-17, 2005.

- Frank Vanden Berghen, CONDOR: a constrained, non-linear, derivative-free parallel optimizer for continuous, high computing load, noisy objective functions. PhD Thesis, University of Brussels (ULB - Université Libre de Bruxelles), June 2004, Belgium

- Frank Vanden Berghen, Hugues Bersini CONDOR, a new parallel, constrained extension of Powell's UOBYQA algorithm: Experimental results and comparison with the DFO algorithm Journal of Computational and Applied Mathematics, Elsevier, Volume 181, Issue 1, 1 September 2005, Pages 157-175 (also available electronically on the Sciences Direct website)

- Hussain Aziz Saleh, Frank Vanden Berghen Human genome behaviour: a powerful mechanism for optimizing the use of space technology in surveying networks design GPS Solutions, Springer-Verlag GmbH, Volume 9, Number 3, September 2005, Pages: 201 – 211

- Frank Vanden Berghen Design et implémentation d'un nouvel algorithme d'optimisation continue non-linéaire dans le cas sans contrainte Specialisation Research Project presented to obtain the Diploma of Deeper Study in Applied Sciences (DEA), University of Brussels (ULB - Université Libre de Bruxelles), June 2003, Belgium

- Simone Pazzi, Francesco Martelli, Vittorio Michelassi, Marco Giachi, Frank Vanden Berghen, Hugues Bersini, Intelligent Performance CFD optimization of a centrifugal impeller accepted to the Fifth European Conference on Turbomachinery, March 2003, Prague (CZ).

- Frank Vanden Berghen A tutorial on Q-learning algorithms internal IRIDIA technical report

- Frank Vanden Berghen Hugues Bersini, Régulation directe adaptative et predictive sur plusieurs pas de temps pour processus à plusieurs entrées et plusieurs sorties chapter of a book entitled « Commande Floue I - de la stabilisation à la supervision » published by Hermes-Science -Lavoisier edition

- Frank Vanden Berghen, Edy Bertolissi, Antoine Duchâteau, Hugues Bersini, Direct Adaptive Fuzzy Control for MIMO Processes, Accepted to the FUZZ-IEEE 2000 conference, San Antonio, Texas, 7-10 May, 2000

- Frank Vanden Berghen, Edy Bertolissi, Antoine Duchâteau, Hugues Bersini Régulation directe adaptative et prédictive sur plusieurs pas de temps pour la commande floue de processus à plusieurs entrées et plusieurs sorties, internal IRIDIA technical report

- Frank Vanden Berghen Développement d'un régulateur flou à plusieurs entrées et plusieurs sorties adaptatif et prédictif sur plusieurs unités de temps-Utilisation et évaluation des performances de ce régulateur Final Research Project presented to obtain the degree of "ingénieur civil" specialised in computer science.

Talks in Conferences/Events

August 19-20, 2016

➢ Big Data Analytics Summit (Lima, Peru)

As a guest speaker, I am giving a technical presentation on TIMi (algorithmic, technical architecture, past and future evolutions). TIMi possesses a unique set of features (automated modeling, self-service data analytics, etc.) and I explain why this places TIMi apart from all other solutions currently available and why it revolutionizes the way in which companies are managing their big data and predictive analytics initiatives.

The organizers from the conference selected a very limited set of prestigious speakers, such as Gilberto Titericz Jr, that is amongst the top Data Scientist in the world following the analytic Kaggle competitions.

October 23, 2015

➢ **TIMi, Biggs & IBM event (Bogota, Colombia)**

This event regrouped nearly all the data scientists from Colombia. I participated to an open discussion with the Head of IBM for Latin America where we talked about the future of advanced analytics.

September 21, 2015

➢ Data Innovation Lab Event (Brussels, Belgium)

The title of the event was "*Real Life Advanced Analytics examples with Timi*". I demonstrated some live cases with TIMi. Other consultants gave nice example of usage of TIMi: PwC presented a SNA (Social Network Analytics) example, AXA presented a churn model for car insurance, Agilytic.be presented the work they did for VOO/BeTV on cross-sell models.

June 19-21, 2008

➢ **Computing and Statistics (ERCIM '08) (Neuchâtel, Switzerland)**

I gave a presentation on the efficient implementation with the LARS-lasso algorithm and talked about some experimentation.

July 18-22, 2005

➢ **22nd IFIP TC 7 Conference on System Modeling and Optimization (Turin, Italy)**

I gave a presentation on the CONDOR optimizer: the algorithmic details and the numerical results.

June 14-17, 2005

➢ **Third *MIT* international Conference on Computational Fluid an Solid Mechanics (Massachusetts Institute of Technology, Cambridge, USA)**

I gave a presentation on the CONDOR optimizer: the algorithmic details and the numerical results.

May 29-30, 2000

➢ **International BELGIUM/FUZZY 2 conference (Faculté des Sciences Appliquées, Mons, Belgium)**

I have presented some results that we obtained at IRIDIA while we were working on the **FAMIMO ESPRIT LTR European project.**

Awards

February 2019 ➢ **http://www.tpc.org/tpch/**

Following the benchmarking results obtained on the universally recognized TPC-H benchmark, Anatella is now the fastest and the most scalable data management tool (ETL tool) on the planet.

November 2017 ➢ **Selected amongst the top 100 most innovate software companies at the international/world level by Red Herring international**

We went to Los Angeles to get our prize! More details here (look at "business-insight"): https://www.redherring.com/2017-red-herring-top-100-global-winners/

February 2017 ➢ **Selected amongst the top 100 most innovate software companies in Europe by Red Herring international**

We went to Amsterdam to get our prize!

June 2016 ➢ **1st place at the European Data Innovation Hub: Euroclear Hackaton**

The aim is to identify key fields in unstructured financial legal documentation. Data consists in thousands of legal documents. We won the first place in this contest with a solution that extracts the "maximum trading amount" out of these legal documents with an accuracy over 97%. The whole project duration was less than 2 days. More details here: https://timi.eu/customer-stories/banking/text-mining, here and here.

January 2015 ➢ **Datascience.fr**

Céline Theeuws obtained the 9th place on a total of 415 participants for a modeling competition named "*Construction d'un score d'appétence en vente croisée pour un produit d'assurance lors d'une campagne télémarketing*". Céline used TIMi to create all the predictive models.

December 2014 ➢ **Kaggle Competition: AXA Driver Telematics Analysis**

Dr. Ir. Colin Molter obtained the 10th place on a total of 1528 participants for a modeling competition. Colin used TIMi to create all the predictive models.

October, 2014 ➢ **Selected to represent Belgium during the Royal Mission in the presence of Princess Astrid to Colombia and Peru.**

We represented Belgium activities linked to big data, advanced analytics and predictive modeling solutions.

May 2014 ➢ **predictiveanalyticstoday.com**

TIMi was elected 6th best Predictive Analytic Solution by a team of expert data scientists.

June and January 2014 ➢ **Innov Iris prices**

In June 2014, Vadis won the "InnovIrisDay price" from the Brussels Region because of RANK, a predictive modeling software that I developed for them (alone) a few years ago. TIMi is in every way superior to RANK. In January 2014,

Reaktor wins the “InnovIris price RISE” thanks to a solution based on TIMi.

September, 2009

➢ **AUSDM2009 cup**

This is a world-wide datamining competition. The objective is to predict the rating (number of "stars" given to a movie: from 1 to 5) that a specific individual will give to a specific movie. The goal of the AusDM 2009 Analytic Challenge was to encourage the discovery of new algorithms for ensembling or 'blending' sets of expert predictions. I obtained the 5th place on a total of 30 participants. I used the “TIM software suite” for datamining for the competition.

May, 2009

➢ **KDD cup 2009**

“KDD cups” (KDD stands for “Knowledge Discovery from Database”) are the most famous competitions in the datamining field. In 2009, the competition had 2 different challenges: I obtained the ranking 22 at the first challenge (also called the “large dataset” challenge because the dataset had 15000 columns) and I obtained the ranking 18 on the second challenge (also called the “small dataset” challenge because the dataset had a “normal-size” of 300 columns). There were more than 1200 participant. This ranking is based on the average quality (AUC) of 3 predictive models that are built using data coming from the "Orange" company (it's the number 1 of the French Telecom). The 3 predictive models to build are a Churn model, a Upselling Model and a "Propensity-to-buy" (appetency) model. I used the “TIM software suite” for datamining for the competition.

May 2007

➢ **Pacific Asia KDD cup 2007**

This is a world-wide datamining competition. The objective is to create a predictive model for a cross-selling application : “credit card” to “Mortage”. I obtained the 6th place on a total of 47 participants. I used an ancestor of the “TIM software suite” for datamining for the competition.

July 2005

➢ "Young fellowship Award for **exemplary research** in Computation Mechanic" from the **MIT (Massachusetts Institute of Technology)**

September 2004

➢ The CONDOR optimizer was recognized as a valuable advance in the field of continuous optimization. As a result, it was installed and made publicly available inside the **world-famous NEOS Server**. See the webpage:
http://neos.mcs.anl.gov/neos/solvers/ndo:condor/AMPL.html

➢ The CONDOR optimizer was also included inside the famous **Decision Tree for Optimization Software** hosted at:
http://plato.asu.edu/sub/nlores.html#general
This places CONDOR among the top optimization softwares and expands the field of my **research on optimization at the international level**.

Secondary school

- 1992 **1st price in the Informatics Olympic Games** in Belgium. I was send with 2 students to represent Belgium at the World Informatics Olympic Games where I classified among the top 50 out 200.
- 1991 5th price Expo-Sciences, Namur, Belgium (subject: calculation of hidden faces on 3D models)
- 1989 **1st price at Expo-Shell** (subject: binary representation & assembler programming)

Linguistic knowledge

➢ **French:** mother tongue

➢ **Dutch:** secondary school knowledge. I also obtained the international certification "Nederlands als Vreemde Taal - graad 2" in the following categories: oral and written comprehension, oral and written expression (There are only 3 grades).

➢ **English:** Excellent level (spoken and written fluently).

Teaching Activities

Since 2005 ➢ I am involved in the teaching activities of the company "TIMi Americas". Amongst different teaching assignments, "TIMi Americas" is giving machine learning and Big data courses in these contexts:

- ESSEC Business School, Paris, France: Daniel Soto (Head of "Timi Americas") gave courses on "Quantitative Marketing" between 2007 and 2011 (segmentation, scoring, positioning).
- Los Andes, Bogota, Colombia: In addition to our sponsorship of the Los Andes Analytics Forum, we regularly give courses and seminars on data mining, and its practical applications. We have a good Collaboration with Prof. Raha and Prof. Akhavan Lida Topacio Sandoval
- Javeriana University, Colombia: Prof. Dora Valdez (Head of Sales &, Marketing from "Timi America") gives a course named "Strategy in Action"
- Konrad Lorenz University, Colombia: We support the management department in the design of a curriculum in analytics (http://www.konradlorenz.edu.co/es/aspirantes/educacion-continuada/cursos-presenciales/1770-analytics-para-la-gerencia-estrategica.html)
- Universidad Piloto, Colombia: We are in frequent contact with this university for the development of many "Data Mining" modules within their Marketing Engineering program (http://www.unipiloto.edu.co/programas/pregrado/ingenieria-de-mercados/)
- ASPROMER: Academic Marketing Association: We sponsored the 2015 event, and we are in ongoing contact to help member universities to integrate data mining techniques in their marketing curriculum.
- Uniempresarial University, Colombia: In 2014, we gave two courses in this university: a general "marketing course" and a "data mining" course.
- Universidad de la Sabana, Colombia: We work in close collaboration with Prof. Liza Pinzon for the development of new analytical courses.
- DMC Peru: Private center in Data Mining training. We have a close cooperation and help them in the definition of certification programs. Our experts also give courses there about segmentation and predictive modeling.
- Universidad de Narino: We give a "Quantitative Marketing" course focused on the commercial applications of data mining.

Since 2005 ➢ I am giving Datamining and predictive Analytics courses to train the data scientists from various private companies on how to create highly-efficient predictive models for various types of applications (mainly churn, cross-selling and up-selling models). For example:

- In 2011, I "jump started" the machine learning activities from Riaktr through a series of seminars and various "hands-on" activities on real-world projects (e.g. churn models for MTN South Africa and Tigo Tanzania). Riaktr is now a very successful consulting company deploying advanced analytics (data mining and network mining) and big data projects all around the world with Timi.
- The 2011/7/6, I trained the data miner team from Bouygues Telecom (3rd largest telecom in France). Through my lessons and using TIMi, Bouygues Telecom went from one low-quality predictive model (for churn, developed in SAS) refreshed twice per year to more than 100 high-quality predictive models refreshed every week.
- In 2015, I trained the data miner team from Partena Mut (Belgium). The training was focused on machine learning and on "simple BI/Reporting" skills. Partena has now in production very high-quality predictive models. Partena also realizes all his reporting activities using Timi.
- Since 2010, I am training all the data miners from VOO/BeTV (Belgium) on Advanced Analytics: I trained more than 60 people in machine learning and in "simple BI/Reporting". Since 2010, VOO/BeTV realizes all his reporting activities and predictive modeling activities using TIMi.
- In 2014, I trained the data miner team from PwC (PriceWaterHouseCoopers) in machine learning (more precisely, on Text Mining). PwC uses Text Mining techniques (with TIMi) to discover frauders in large text corpus (emails).
- The 2011/4/4 and the 2015/9/28, I gave training sessions to the data miners from Deloitte. The sessions were focused on predictive modeling techniques.
- Since 2015, each year, I am giving machine learning lessons inside the Data Innovation Lab (now named "DigitYser") in Brussels. The lessons are focused on machine learning techniques and Big data techniques (e.g. boot camp in 2016 , 2015-10-8, 2015-11-16, 2015-12-7, bootcamp in 2017 and 2018)
- In 2007-2008, I created and trained the whole the data scientist team from Vadis.

2019 ➢ I created YouTube tutorial videos to learn how to do various ETL tasks with Anatella, the high-performance Big data/ETL tool included in TIMi.

1999-2003 ➢ I was involved in the **teaching activities** of the IRIDIA laboratory. I gave laboratories of **C++** and java in the faculty of engineering. I also gave **advanced java formation** for enterprises (see www.technofutur3.be).

Computer skills

Programming Languages ➢ Anatella (graphical language optimized for data manipulations for AI & ML) ; **C/C++** (Visual Studio .NET Windows programming + Qt) ; Python ; R ; Javascript ; SAS ; Java (swing, tcp-ip, rmi, jdbc, applets,...); Matlab ; **Assembler** x86-pentium (demo-coder) ; Assembler 65XX (C64 & apple II); Assembler 8085 ; Assembler Saturn (HP48) ; PHP ; Pascal/Delphi ; Fortran ; Scheme; SQL ; Various Tools in the Hadoop eco-system (Hive, Kafka) ; ...

Mathematical Skills ➢ I possess a deep knowledge in everything related to Big Data & Advanced Analytics. I am familiar with 99% of any **classification/regression/clustering** algorithm for **machine learning and AI**. During my thesis, I used extensively **interpolation**/regression techniques, **optimization techniques** (continuous and

discrete), fuzzy control and the **classical optimal robust control** theory, high efficiency **linear algebra** routines. I had the opportunity to use extensively the lapack and blas libraries, self-adaptive fuzzy controllers, decision trees, lazy learning, multivariate lagrange interpolators, neural networks, evolutive and gradient-based optimization algorithms.

Network Programming

- low level **TCP-IP socket** programming in C&Java ,...; CGI ; client-server applications;...During my work at IRIDIA, I had the opportunity to construct and use a **Beowulf** of 8 nodes.

Software

- I am familiar with **Visual Studio .NET**, the TIMi suite, R-Studio, Anaconda, MySQL, Php, JS, Oracle, Informix, Subversion, Git, 3Dstudio Max 2, Photoshop, Apache, SAS, Microsoft Office.

Operating Systems

- **Unix** (Linux and Solaris – Bash shell) and **Windows** 98/XP/Vista/8/10 are more than familiar to me.

Ambition

My objective is to allow any company or person to extract knowledge out of their data. I firmly believe that we can live in a better world if we start using more the data that surrounds us.

To help people to efficiently use their data, I created TIMi. TIMi is a data analysis platform to make machine learning, big data & AI. TIMi is totally revolutionary: 1000 times faster, 1000 times more scalable, virtually no need for any heavy hardware infrastructure, 100% in self-service and operated entirely with the mouse.

My ambition with TIMi is to create the analytical platform of tomorrow. This pushes me to develop new algorithms to create more efficient, more precise and faster software solutions. To reach these goals, TIMi is using a combination of high-level advanced mathematics and optimized low-level programming (C&ASM).

Hobbies

- **Sport:** squash, karting, fencing, scuba diving, dancing, badminton, Horse riding,..
- **Hobbies:** programming, SF books, comics, movies, RPG,...