

**Introduction:** I am a software architect, knowledge engineer, software developer, development team leader, programming coach and trainer – with 28 years professional experience. I design and build large data-driven, scientific, academic, collaborative, e-commerce, publishing systems and frameworks. I am fluent in diverse programming languages, knowledge representation technologies, frameworks, visualization tools, RDBMSes, ORMs, APIs, standards, methodologies and architectural styles.

My current work is is focused on exploiting knowledge representation, collaborative filtering, evolutionary pressure and mass customization strategies for building out a global-scale knowledge management eco-system wherein software, knowledge and presentation co-evolve under the pressure of human opinion.

Professional Specialties:	<ul style="list-style-type: none"><li>• Knowledge Representation</li><li>• Knowledge Publishing</li><li>• Electronic Data Interchange</li><li>• Open Source / Free Software</li><li>• Test Driven Development</li><li>• Asynchronous Web Servers</li><li>• Object Relational Mapping</li><li>• Identity Management</li></ul>			<ul style="list-style-type: none"><li>• Semantic Web</li><li>• Collaborative Filtering</li><li>• E-Commerce</li><li>• Object Oriented Programming</li><li>• Dynamic Graphics</li><li>• Pattern Languages</li><li>• Topic Maps</li><li>• NoSQL Datastores</li></ul>		
Languages, Formats, APIs and DTDs:	<ul style="list-style-type: none"><li>• Python</li><li>• Javascript</li><li>• Java</li><li>• Coffeescript</li><li>• Postscript</li><li>• SQL</li><li>• Bash</li><li>• ObjC</li></ul>	<ul style="list-style-type: none"><li>• Scala</li><li>• Perl</li><li>• C</li><li>• AWK</li><li>• Scheme</li><li>• Smalltalk</li><li>• Erlang</li><li>• LISP</li></ul>	<ul style="list-style-type: none"><li>• HTML5</li><li>• CSS</li><li>• SVG</li><li>• XML</li><li>• JSON</li><li>• jQuery/UI</li><li>• D3</li><li>• &lt;canvas&gt;</li></ul>	<ul style="list-style-type: none"><li>• Angular</li><li>• Selenium</li><li>• DocBook</li><li>• SGML</li><li>• L<sup>A</sup>T<sub>E</sub>X</li><li>• Markdown</li><li>• MARC</li><li>• Make</li></ul>	<ul style="list-style-type: none"><li>• TMAPI</li><li>• Mappa</li><li>• OWL</li><li>• OKBC</li><li>• LTM</li><li>• CTM</li><li>• N3</li><li>• TriG</li></ul>	
Standards Implemented:	<ul style="list-style-type: none"><li>• TMDM</li><li>• Digest Auth</li></ul>	<ul style="list-style-type: none"><li>• OKBC</li><li>• RBAC</li></ul>	<ul style="list-style-type: none"><li>• RETS</li><li>• ANSI X12 EDI</li></ul>			
Systems:	<ul style="list-style-type: none"><li>• Linux</li><li>• AS/400</li></ul>	<ul style="list-style-type: none"><li>• OS X</li><li>• NeXTstep</li></ul>	<ul style="list-style-type: none"><li>• iOS</li><li>• Windows</li></ul>	<ul style="list-style-type: none"><li>• Android</li></ul>		
Software:	<ul style="list-style-type: none"><li>• Emacs</li><li>• SQLite</li><li>• Django</li><li>• GIMP</li><li>• NodeJS</li></ul>	<ul style="list-style-type: none"><li>• Bazaar</li><li>• MongoDB</li><li>• Tornado</li><li>• OpenOffice</li><li>• SalesForce</li></ul>	<ul style="list-style-type: none"><li>• GIT</li><li>• Oracle</li><li>• Medusa</li><li>• POVRay</li><li>• BeanStream</li></ul>	<ul style="list-style-type: none"><li>• Eclipse</li><li>• MySQL</li><li>• Zope</li><li>• Squeak</li><li>• GraphViz</li></ul>	<ul style="list-style-type: none"><li>• VirtualBox</li><li>• PostgreSQL</li><li>• PlayFramework</li><li>• Singly</li><li>• ElasticSearch</li></ul>	
Industries:	<ul style="list-style-type: none"><li>• Bibliographic Systems</li><li>• B2B &amp; B2C E-Commerce</li><li>• Real Estate</li><li>• Fleet Automation &amp; Tracking</li><li>• Laboratory Information Management</li></ul>			<ul style="list-style-type: none"><li>• Digital Humanities</li><li>• Database Publishing</li><li>• Recruiting Systems</li><li>• Supply Chain Automation</li><li>• Learning Management</li></ul>		

## Experience:

Founder & CEO

Nooron Collaboratory Inc

2015 to present

Edmonton, Canada

I am the founder and software architect of Nooron: a web-based productivity suite, decision support and collective human cognition platform. It consists of a novel semantic database backend and flexible frontend which includes knowledge management, data visualization and collective intelligence application development tools. Nooron Inc is funded both by angel investment and by revenue from services delivered to a consortium of universities including the University of Guelph, the University of Alberta and Cambridge University.

Fullstack Software Engineer

Connectifier

2013 to 2014

Orange County, California

I used Java, Scala, AngularJS, the Play Framework, MongoDB, Elastic Search and Selenium as part of a startup team to build a category leading recruiting platform. Connectifier uses big data and machine learning techniques to crawl the web and social networks for CV and contact information to empower recruiters specialized in hiring software engineering talent. I was engineer #6 after the four initial Google software engineers. I left to found Nooron Collaboratory. Connectifier was later acquired by LinkedIn.

Architect & Programmer

The Orlando Project

2013 to 2014

Universities of Alberta, Guelph & McGill

I architected and coded an animated highly interactive semantic visualization research platform using D3, Canvas, RDF, OWL, XML and NodeJS for a university consortium working in the digital humanities. It features multi-modal interactivity ( using direct manipulation; bulk specification and a novel semantic graph layout specification language ) to support visual exploration of a large text corpus.

Founder, CTO, Software Architect

Semandra, Inc.

2011 to 2014

Edmonton, Canada

Semandra provided full-service front-to-backend website development specializing in graphics-intensive designs with multimedia integration, database-driven backends with complex programming requirements, and content-rich user-maintainable CMS sites.

- Ponderate — an agile, collective knowledge curation and evaluation tool
- TOBFleet — a RESTful web service which simplifies vehicle fleet integrations
- Theamatic — a web application for repertory theatre and film festival management.
- CReturns — a graphical scheduling system, e-commerce solution and Salesforce integration for this home energy auditing and retrofitting service

Principal

smurp.com

2002 to 2011

Edmonton, Canada

Smurp.com provided contract programming and consulting services with a focus on database-backed web sites and complex data processing operations.

- PyOKBC — A Python implementation of the *Open KnowledgeBase Connectivity* system of knowledge representation and abstraction. It was designed to provide a single consistent interface to diverse structured information sources, to include ontologies, relational databases, xml documents, and topic maps.
- PyRETS — An implementation of the *Real Estate Transaction System* for keeping the Vancouver Real Estate Board synchronized with MLS.ca
- CatPub — A database publishing technology consisting of a Postscript templating system over a relational database back-end. Suitable for automatically preparing complex, highly customized, Postscript and PDF publications such as directories and catalogs. It continues to drive print automation for the largest real estate markets in British Columbia.
- TKQ2.0 — A Django e-store system vending e-books for hundreds of educational publishers, through a dozen store-fronts, with sophisticated features such as promotions, steganographic watermarking in PDF, bundling, coupons and more.

- TKQW — A Medusa-based “digital drop-shipping” system enabling digital goods sale and delivery by untrusted 3rd parties.
- ModelViz — Added dynamic SVG-based touring facilities to this Django model entity-relationship visualizer.
- Alberta Lodging Association — A Django-based lodgings database backing a web site, a printed directory and an associated advertising sales and layout system.

Founder, Chairman and VP, R&D  
Oct 1995 to Jan 2003

Emergence by Design, Inc.  
Edmonton, Canada

I founded Emergence by Design and acted as VP of R&D, lead developer and chief architect of this 15-person software development organization.

Emergence by Design provided consulting, development, hosting and ecommerce services to new dot-com ventures.

- GetCited.org — chief architect and lead developer on this massive, highly abstracted academic bibliographic portal system featuring:
  - reference and citation cross-references
  - per-publication discussion forums
  - curriculum vitae management
  - links with Amazon and other vendors for associate referral income
  - seeded with MARC Book and Serials databases from Library of Congress
  - rich array of publication types (proceedings, books, articles, manuscripts, bibliographies, etc)
  - tracking of individual/institutional affiliations
  - sophisticated statistics on publishing influence of nations, institutions and individuals based on citation counts
- DedicatedTeacher.com — architect and lead developer for this large, highly abstracted ecommerce engine featuring:
  - sells both ‘digital-goods’ (eg. MP3s and PDFs of books) and ‘tangible goods’ (printed books, CDs, educational kits)
  - complex shipping options
  - multiple suppliers per store
  - sophisticated coupon, bundle, sale and promotion features
  - serves store fronts for various companies (e.g. Scholastic)
  - supports multiple currencies, multiple credit-card transaction backends simultaneously and selectively (depending on currency, card-type, availability, etc.)
- Law Opinion — architect and developer of the worlds first E-Commerce facility for the provision of paid legal opinions. It included numerous encryption safeguards to ensure complete client confidentiality; a system for letting people pick the nearest lawyer with experience in the chosen area of the law; and a sophisticated, dynamic, system for performing branching automated interviews.
- FindAMentor.com — architect and lead developer of this system for helping people find and interact with mentors in various areas of their lives; complete with anonymization and multiple personal profiles in different areas of interest
- EmailDirector — architect and developer of this web-based school management system with parallel web and email interfaces and sophisticated email transaction system for, at that time, Canada’s largest e-school with 2500 grade-school students
- EStore — architect and developer of this web interface for creating E-Commerce websites using NGage Electronic Commerce technology
- ClickTrace — architect and developer of this web log mining facility

- Domainatrix — architect and developer of this toolset for bulk management of domain registrations, DNS configurations and network interface configuration
- Edmonton Chamber of Commerce Annual Directory — architect of this database-driven directory including ads and equivalents of white pages and yellow pages

Systems Analyst III

1990 to 1995

Gov't of Alberta

Edmonton, Canada

I was responsible for analysis, design, programming, training and support of LAB-BASE: a multi-disciplinary LIMS (Laboratory Information Management System) coded in Paradox and WordBasic. It co-operated with a legacy AS/400 application written in RPG/400 and CL, which I also maintained. During this project I managed two other programmers, the AS/400 administrator and a tech support person.

Principal

1990 to 1995

Sapient Systems

Edmonton, Canada

Sapient Systems specialized in the creation of desktop database apps, including:

- *FastEDI* written in PAL (the Paradox Application Language) which provided a subset of the ANSI X.12 (V3.020) Electronic Data Interchange system for an oilfield supply company interested in easing the ordering process for the many regional offices of their large clients in the oil patch. *FastEDI v1.0* implemented the transaction sets for Price/Sales Catalog (832) and Purchase Order (850) thus enabling the electronic distribution of the latest pricelist and placement of orders.