Ian N. Deters

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ACTUARIAL DESIGNATION

- Casualty Actuarial Society, ACAS, 2017

EDUCATION

- Bowling Green State University, Bowling Green, OH
  Ph.D., **Mathematics**, 2009
- The University Of Akron, Akron, OH
  Master of Science, Mathematics, 2005
- Malone University, Canton, OH
  Bachelor of Arts, Mathematics, **Summa Cum Laude**, Minor: Computer Science, 2003

EXPERIENCE

- **Lead Data Scientist**, MedPro Group, August 2018 – Present: Manage four scientists / analysts in a still expanding department of seven that I and another built, maintain data vendor relationships, vet new data sets, oversee the complete life of modeling projects, research and build generalized linear and neural network models to aid in the setting of rate relativities, reserving, and addressing operational and marketing challenges.
- **Senior Predictive Analyst**, Farmers Insurance Group, December 2012 – August 2018: I researched and built generalized linear and neural network models to aid in the setting of rate relativities and addressing operational and marketing challenges.
- **Actuarial Analyst,** Farmers Insurance Group, March 2015 – November 2015: I participated in the calculation of overall rate indications, the creation of base rate offset tools, needed base rate changes, the validation of data, and testing of implemented rates.
- **Programmer I**, National Interstate Insurance Company, December 2011 – November 2012: I found and resolved various database problems and assisted in expanding the business intelligence database and data cube.

PROJECT LIST

- **Initial Model Development Frame** – Led MedPro's initial model development efforts
  - Created a code base of many project agnostic modules to facilitate speedier modeling efforts
  - Led a team of other data scientists in the production of multiple underwriting and claims models
  - Assisted in the implementation of models in Amazon Web Services
- **Lead Auto ROC Coder** – Led a team of three others to produce an auto rate order of calculation (ROC) compliant with New York law. This project included
  - Writing and distributing code which automatically determined the salient aspects of each step of the modeling. This increased efficiency by freeing the modelers to focus on other projects.
  - Automating the checking of factor selections which would create a poor customer experience.
  - Coordinating the efforts of the modelers to run the code and to create exhibits useful for product management to make effective decisions.
- **Lead Home Territory Coder** – Led a team of modelers to produce territory factors. This project included

    - Writing and distributing code which automatically determined the salient aspects of each step of the modeling. This increased efficiency by freeing the modelers to focus on other projects.
    - Accounting for auto spatial correlation among ZIP codes.
    - Coordinating the efforts of the modelers to run the code and to create exhibits useful for product management to make good decisions.
- **Research**
    - Regional ROCs – Led a team of two others to explore whether it would increase pricing precision to have different auto ROCs for different groups of states. This project included
        - Determining how to partition states into groups for which ROCs will be built.
        - Writing and distributing code that would do the above, create the ROCs, and test the ROCs.
    - Software Integration – Wrote SAS code which seamlessly integrated third party software into SAS. The software allowed models to be built quickly and the integration meant that modelers could execute it from within SAS without concerning themselves with the details of execution.
    - Combining Exposures – Determined the theory of combining different kinds of exposures and used this to demonstrate a better way to do combined coverage modeling.
    - Pricing research – Determined the mathematical foundations of on-leveling premium and demonstrated the superiority of a lesser known method over the parallelogram method.
- **Other Modeling**
    - Automated the creation of over 1000 imputation models satisfying various business requirements
    - Created various credit models for different coverages for both home and auto products.
    - Created vehicle risk models which used vehicle information encoded in the VIN to determine the risk associated with the vehicle.
    - Created multiple demand models for different states to help product managers better determine the impact of pricing decisions.

TECHNICAL SKILLS

- **Mathematics** – produced original mathematical and actuarial research; obtained a background in various areas of pure and applied mathematics.
- **Computer Science** –SAS Expert, R Expert, Windows, AWS, Excel, Word, SQL, SSIS, SSAS, C++, JAVA, and a passing familiarity with Python.
- **Communication** - Demonstrated the applications and methods of mathematical techniques to coworkers, supervisors, and students; Coordinated with record and promotions companies to promote new bands and records.

PUBLICATIONS / Presentations

- Deters, Ian. (2022, June 21 – 24). The Mathematics Of Machine Learning [Conference presentation]. Amazon re:MARS 2022, Las Vegas, NV, United States. https://www.youtube.com/watch?v=Tk1nnou9Du0
- Deters, Ian. (2021, October 18 – 19). The Mathematics Of Modeling [Conference presentation]. All Things Open 2021, Raleigh, NC, United States. https://www.youtube.com/watch?v=YLHcJBUUWXI
- Deters, Ian. "The Mathematics of On-Leveling." *Casualty E-Forum, Spring 2017* 22 March 2017. Web.
- Deters, Ian, "Constructing polynomials of minimal growth", Journal Of Contemporary Mathematical Analysis **49** (2014) 117 - 125
- Deters, Ian, Seubert, Steven, M., "An application of entire function theory to the synthesis of diagonal operators on the space of entire functions", Houston Journal Of Mathematics **38** (2012) 201 - 207
- Deters, Ian, "A connection between operator topologies, polynomial interpolation, and synthesis of diagonal operators", Journal Of Mathematical Analysis And Applications **350** (2009) 354 – 359
- Deters, Ian, Seubert, Steven, M., "Cyclic vectors of diagonal operators on the space of functions analytic on a disk", Journal Of Mathematical Analysis And Applications **334** (2007) 1209 – 1219