Practicing Statistics and Data Science at P&G

Virtual Career Fair for Statisticians in Consumer Products or Biopharm Industries
NISS Virtual Event
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Procter & Gamble Facts

➢ Established in 1837 (Initially a Soap and Candle Company, Cincinnati, Ohio)
Procter & Gamble Facts

➢ 5+ Billion Consumers
➢ 130+ Countries
➢ ~95,000 Employees Worldwide
# Procter & Gamble Business Units and Brands

<table>
<thead>
<tr>
<th>Baby</th>
<th>Feminine Care</th>
<th>Family</th>
<th>Fabric</th>
<th>Home</th>
<th>Hair</th>
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Corporate Functions

My role as Global Statistics Discipline Leader...
Statistics & Data Science Organization at P&G

~ 54 Statisticians (Ph.D., MS and BS)
~ 55 Data Scientist (Ph.D., MS and BS)

R&D – Dual Career Track
Statistics & Data Science at P&G

US
- Cincinnati
- Boston
Statistics & Data Science at P&G

Europe
➢ UK
➢ Germany
➢ Belgium
Statistics & Data Science at P&G

Asia
➢ Beijing
➢ Singapore
Application Areas

Consumer Research

Product, Package and Process Development

Clinical Research
Application Areas

Claims

Biotech

Product Safety

P&G
Develop a new bottle design

Develop a new optimal process

Develop a new laundry formulation with improved consumer benefit
Packaging Development via Computer Simulation

**Business Problem:** Reduce the cost for expensive creation of prototypes and testing for new bottle development

**Statistical Method/Tool:** Design & Analysis of Computer Experiments
Text Analytics

➢ Gain Consumer Insight on Unstructured Text Data
  o Survey of a Consumer Study
  o Product Review
  o Consumer Complaints
Consumer Education and Product Recommendation
Olay Skin Advisor

THE SCIENCE BEHIND
OLAY SKIN ADVISOR
skinadvisor.olay.com
Deep Learning

Deep Neural Network application

- The skin advisor uses convolutional neural networks trained using NVIDIA graphics processors to perform trillions of calculations per second. The model was trained on 50,000 images with chronological age data tags.
- When an image of a user is received, the model is used to determine the visible skin age based on the pixels in the image, further a two-dimensional heat map is generated that identifies a region of the image that contributes to the visible skin age.
Technical Skills

➢ Design and Analysis of Experiments
  o Physical Experiments
  o Computer Experiments
  o Discrete Choice

➢ Explanatory and Predictive Modeling
  o Linear Models, Generalized Linear Models and Non-linear Models
  o Response Surface Methodology
  o Statistical/Machine Learning, Deep Learning
  o Multivariate methods, Partial Least Squares (PLS)
  o Reliability Modeling

➢ Data Visualization

➢ Other Areas
  o Bayesian Methods
  o Multivariate Methods
  o Text Analytics
  o Statistical Process Control
  o Evaluating Measurement Systems (Gauge R&R)

➢ Programming – R, SAS, Python, etc.
Non-Technical Skills

➢ Good Communicator
  o Verbal
  o Written
  o Develop Good Presentations

➢ Good Collaborator (“Team Player”) 

➢ Good Problem-Solving Skills

➢ “Innovative Spirit” and “Entrepreneurial Spirit”

➢ Effective Problem Definition – Help Project Teams Get Clarity on Defining Their Problem
Leadership Thoughts: Statistician in Industry – Technical Career Track

- Lead through problem solving and innovation. Solve large, unstructured, impactful problems - Statistical Engineering. *Influencing and Collaboration are KEY*
- Lead/drive Industry and Academic connections
- Lead the Leaders – lean-in on strategic discussions and management decisions. *Contributor* to management decisions - organizational design, ratings, promotions, etc
- Lead through Coaching and Mentoring

![Hard and Soft Skills Interaction Plot](image)

1. **Hard Skills**
   - Theory, Technical Mastery, Computing
   - *Learn how to Learn – Keep Learning!*
   - *Identify NEW Problems and Collaborate with Academia*

2. **Soft Skills**
   - **Communication**, Influencing, Collaboration
   - Statistical Engineering
   - Integrity, responsibility, honesty, ...
   - “Do the right thing!”
Open Positions and Additional Information

For all full time and intern positions, please go to pgcareers.com

Full time positions (R&D)
  a. Statistician / Senior Statistician, Statistics & Consumer Research Analytics, Beauty Care at Procter and Gamble (pgcareers.com) Singapore or Beijing
  b. Data & Modeling Sciences - Director at Procter and Gamble (pgcareers.com)
  c. Senior Bayesian Statistician at Procter and Gamble (pgcareers.com)
  d. Data Scientist at Procter & Gamble (pgcareers.com)

Full time positions (IT)
  a. Data Scientist Masters (Evergreen)
  b. Data Scientist PhD (Evergreen)

Intern positions (IT) - Summer 2022
  a. Data Scientist Masters Internship (Evergreen)
  b. Data Scientist PhD Internship (Evergreen)

For more information about P&G, please go to us.pg.com