Statistics & Data Science Internships at P&G

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Director, Data Science & AI
Procter & Gamble

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Statistician, Advanced Consumer Modeling & Statistics
Procter & Gamble
Procter & Gamble Facts

➢ Established in 1837 (Initially a Soap and Candle Company, Cincinnati, Ohio)

James Gamble & William Procter
65 LEADING BRANDS
65B NET SALES
5B CONSUMERS USE OUR BRANDS
180 COUNTRIES SELL OUR BRANDS
>145 NATIONALITIES MAKE UP OUR WORKFORCE
40K WOMEN AND GROWING
### 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>
<th>Skin &amp; Personal Care</th>
<th>Grooming</th>
<th>Oral</th>
<th>Personal Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Pampers" /></td>
<td><img src="image2" alt="Always" /></td>
<td><img src="image3" alt="Bounty" /></td>
<td><img src="image4" alt="Tide" /></td>
<td><img src="image5" alt="Fabric Softener" /></td>
<td><img src="image6" alt="Shampoo" /></td>
<td><img src="image7" alt="Olay" /></td>
<td><img src="image8" alt="Gillette" /></td>
<td><img src="image9" alt="Oral B" /></td>
<td><img src="image10" alt="Meta-Karb" /></td>
</tr>
<tr>
<td><img src="image11" alt="Luvs" /></td>
<td><img src="image12" alt="Tampax" /></td>
<td><img src="image13" alt="Charmin" /></td>
<td><img src="image14" alt="Ariel" /></td>
<td><img src="image15" alt="Dishwasher Detergent" /></td>
<td><img src="image16" alt="X-Fiber" /></td>
<td><img src="image17" alt="Sniffles" /></td>
<td><img src="image18" alt="Nexum" /></td>
<td><img src="image19" alt="Nytarbol" /></td>
<td><img src="image20" alt="P&amp;G Logo" /></td>
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</tbody>
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**Corporate Functions**
CES and Smart Products

Featuring the Oral-B iO Experience
Work on compelling business problems

1. MARKETING SPEND
2. RETAIL EXECUTION
3. SUPPLY CHAIN OPTIMIZATION

Brief
P&G's sales jump as ad spending shrinks, data-driven marketing ramps up

P&G cuts annual ad spend by $350M as it targets 'smart audiences'
R&D Statistics & Data Science Organization

- 50+ Statisticians (Ph.D., MS and BS)
- 50+ Data Scientists (Ph.D., MS and BS)
US Based Statistics & Data Science at P&G

➢ Cincinnati
➢ Boston
Statistics & Data Science at P&G

Europe
- UK
- Germany
- Belgium
Application Areas

Consumer Research

Product, Package and Process Development

Clinical Research
Application Areas

Claims

Biotech

Product Safety
Natural Language Processing & Generation

➢ Gain Consumer Insight on Unstructured Text Data
  o Survey of a Consumer Study
  o Product Ratings & Reviews
  o Consumer Complaints

• BERT based NLP models
• Chatbots (GPT-3)
Consumer Education and Product Recommendation
Olay Skin Advisor
Develop a new laundry formulation with improved consumer benefit

Develop a new bottle design

Develop a new optimal process
Understanding Consumers Using Statistical Models

➢ Conjoint Analysis:

Measure consumers’ likes & dislikes using choice-based questions rather than ratings

<table>
<thead>
<tr>
<th>Brand</th>
<th>Tide</th>
<th>Gain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price</td>
<td>$20</td>
<td>$15</td>
</tr>
<tr>
<td>Benefit</td>
<td>Clean</td>
<td>Scent</td>
</tr>
<tr>
<td>Your Choice</td>
<td>X</td>
<td></td>
</tr>
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</table>
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
Technical Skills

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

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

➢ Other Areas
  - Bayesian Methods
  - Multivariate Methods
  - Natural Language Processing and Generation
  - Internet of Things
  - Recommendation Engines
  - Computer Vision
  - Statistical Process Control
  - Evaluating Measurement Systems (Gauge R&R)

➢ Programming – R, Python, SAS etc.
My Thoughts on Internships

• Critical part of building your future

• Assess a career path and company/institution

• Build professional network, mentors

• We select the problem to match business needs with skills

• Successful internships often lead to full time offers
Reflect on Ji’s Internships

• Critical part of building your future
• Successful internships often lead to full time offers
  – I went back to Cincinnati and joined P&G
• Assess a career path and company/institution
  – US corporate culture vs. academic
• Build professional network, mentors
  – I met my PhD advisor there
• We select the problem to match business needs with skills
  – 2009: SAS programmer (plots and tables)
  – 2011: GLMM
  – Get ready to learn
Ji’s Learning on Seeking Internships

• Evaluate yourself against your peers and know your strength
  – Good at programming?
  – Good at “real world” projects?

• Effectively communicate to show your strength (STAR method)
  – Situation
  – Task
  – Action
  – Result

• Showcase your own research
  – the ability to learn and develop
Open Internships Summer 2023

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

Full time and Internship positions

Day in the life of a P&G Data Scientist:

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