Fun with Simulations:
Stochastic Darts...

Hey... I can do this!

Simulation

Valuation

Structure

That's similiar to (re)insurance modeling

Umm... That seems easy enough.

Fun with Simulations: Stochastic Darts...

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RSS Fee

Darts for Geeks: Statistician Cracks the Game's Secrets

http://www.wired.com/magazine/2009/11/st_darts/

A Statistician Plays Darts

Ryan J. Tibshirani*   Andrew Price†   Jonathan Taylor‡

Abstract

Darts is enjoyed both as a pub game and as a professional competitive activity. Yet most players aim for the highest scoring region of the board, regardless of their skill level. By modeling a dart throw as a 2-dimensional Gaussian random variable, we show that this is not always the optimal strategy. We develop a method, using the EM algorithm, for a player to obtain a personalized heatmap, where the bright regions correspond to the aiming locations with high (expected) payoffs. This method does not depend in any way on our Gaussian assumption, and we discuss alternative models as well.

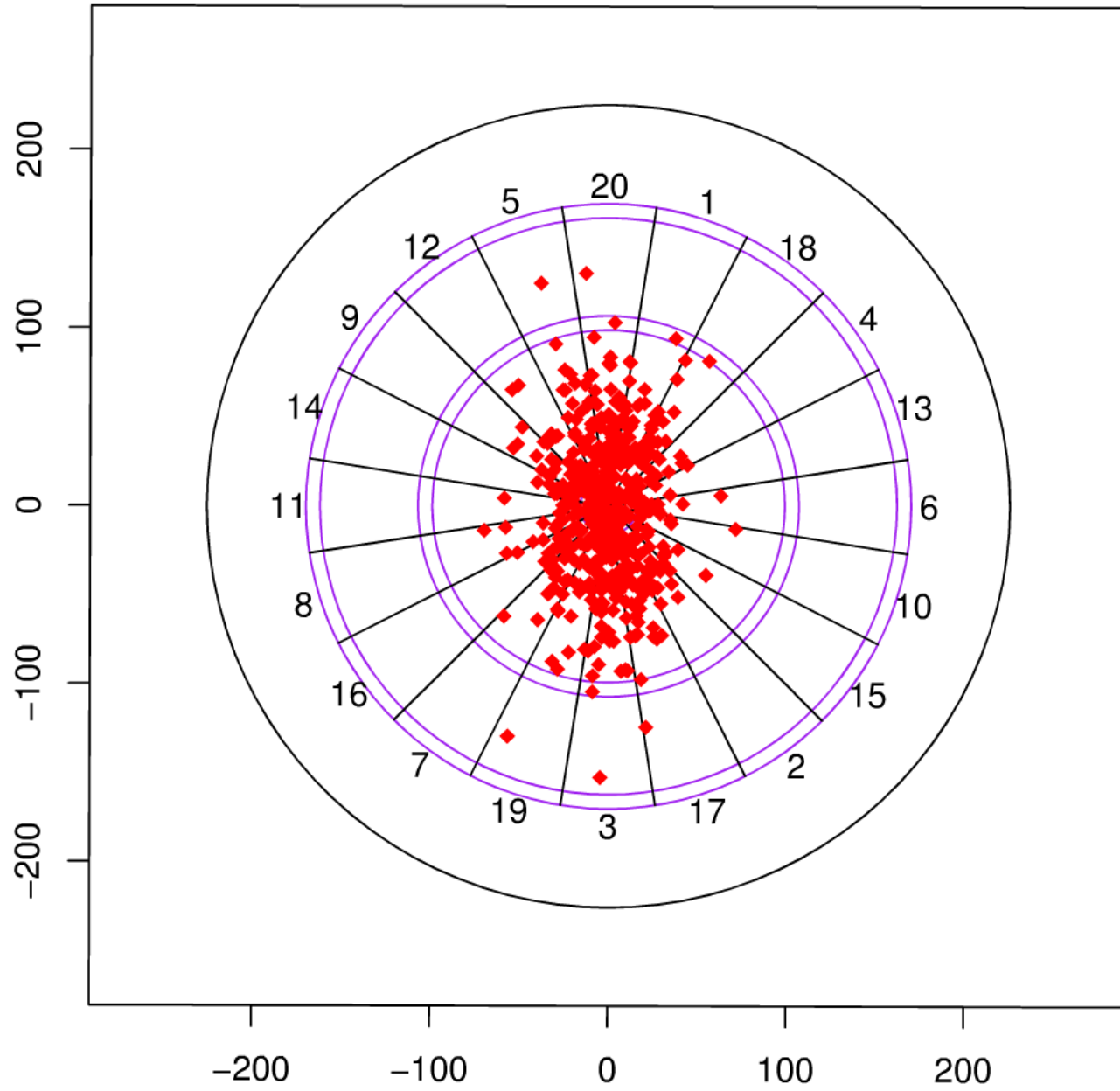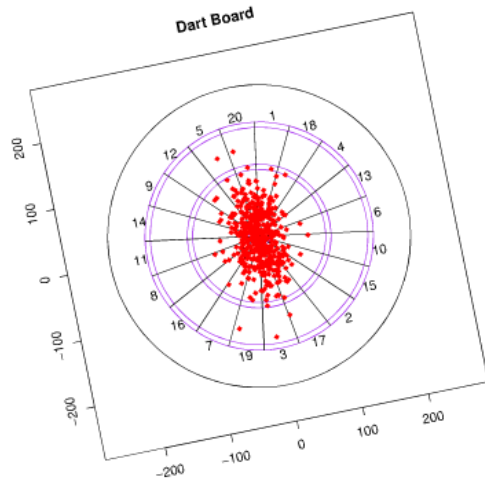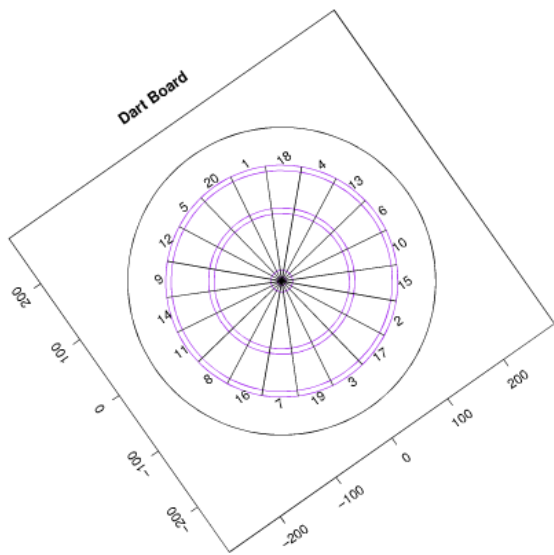Keywords: *EM algorithm, importance sampling, Monte Carlo, statistics of games*

http://www-stat.stanford.edu/~ryantibs/darts/darts.pdf

Hey... I can do this!

Dart Board
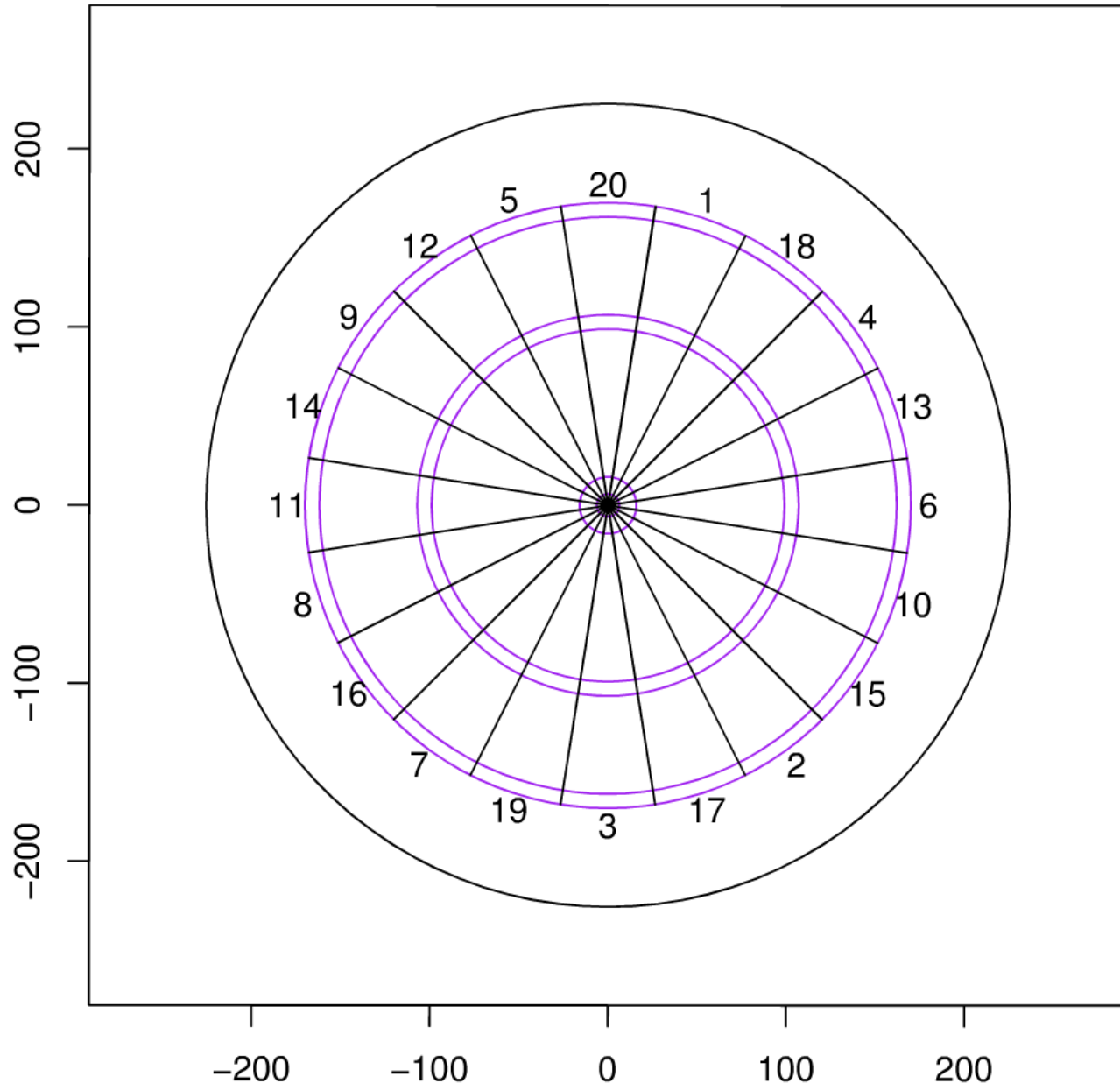
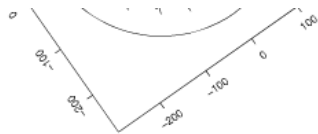# Dart Board

```
> scoreThrow(-66, -8)
[1] 11
```

Structure

Simulation

Valuation

do this!

Simulation

Structure

Valuation

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Umm... That seems easy enough.

That's similiar to (re)insurance

Umm... That seems easy enough.

I hope the distributions are right...

Are they screwing us?

How do I explain this to my risk committee?

How is capital going to be allocated against this deal?

Is this correlated with anything else in our reinsurance book?

Dart source code and more at CerebralMastication.com