Abstract Criticism

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1 First Paper

- **Title**: Digital morphogenesis via Schelling segregation
- **Abstract**:


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 Schelling's model of segregation
looks to explain the way in which
particles or agents of two types may
come to arrange themselves spatially
into configurations consisting of
large homogeneous clusters, i.e.
connected regions consisting of only
one type.
As one of the earliest agent based
models studied by economists and
perhaps the most famous model of
self-organising behaviour, it also
has direct links to areas at the
interface between computer science
and statistical mechanics, such as
the Ising model and the study of
contagion and cascading phenomena in
networks.

While the model has been extensively
studied it has largely resisted
rigorous analysis, prior results
from the literature generally
pertaining to variants of the
model which are tweaked so as
to be amenable to standard
techniques from statistical
mechanics or stochastic evolutionary
game theory.Here we provide a
rigorous analysis of the model's
behaviour much more generally
and establish some surprising
forms of threshold behaviour,
notably the existence of situations
where an \emph{increased} level
of intolerance for neighbouring
agents of opposite type leads
almost certainly to \emph{decreased}
segregation.
```


- **Violations**:
  - The abstract contains LaTeX commands when the abstract should not be seen by the reader.
  - The abstract contains a reference to another work.
  - The title fails to tells the reader that the authors want to talk more about the general behavior of the model that they are using
  - Not every significant word in the title is capitalized
  - The abstract suffers from very long sentences tht do not flow very well.
- **Improved Title**: Digital Morphogenesis via General Study of Schelling Segregation
- **Improved Abstract**: It is shown that Schelling's model of segregation explains the way in which particles or agents of two types may come to arrange themselves spatially into configurations consisting of large homogeneous clusters. As one of the earliest agent based models studied by economists

and perhaps the most famous model of self-organising behaviour, it also has direct links to areas at the interface between computer science and statistical mechanics.

While the model has been extensively studied, it has largely resisted rigorous analysis. Results from the literature generally pertaining to variants of the model have been tweaked so as to be amenable to standard techniques from statistical mechanics or stochastic evolutionary game theory. Here, a rigorous analysis has been provided of the model's behaviour much more generally and has established some surprising forms of threshold behaviour, notably the existence of situations where an *increased* level of intolerance for neighbouring agents of opposite type leads almost certainly to *decreased* segregation. [1]

2 Second Paper

- **Title**: Constructive discrepancy minimization for convex sets

- **Abstract**:

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  A classical theorem of Spencer
shows that any set system with n
sets and n elements
admits a coloring of discrepancy
O(n^1/2).
Recent exciting work of Bansal,
Lovett and Meka shows that such
colorings can be found in
polynomial time. In fact, the
Lovett-Meka algorithm finds a half
integral point in
any ``large enough'' polytope.
However, their algorithm crucially
relies on
the facet structure and does not
apply to general convex sets.
We show that for any symmetric
convex set K with measure at least
exp(-n/500),
the following algorithm finds a
point y in K \cap [-1,1]^n with
Omega(n) coordinates in {-1,+1}:
(1) take a random Gaussian vector
x; (2) compute the point y in K \cap
[-1,1]^n that is closest to x. (3)
return y.

This provides another truly
constructive proof of Spencer's
theorem and the first constructive
proof of a Theorem of Giannopoulos.
```

- **Violations**:
  - The abstract contains symbols and expressions.
  - The abstract uses Big O as part of expression but such information may be needed to comprehend material.
  - The abstract refers other works.
  - Not every important word in the title is capitalized

- **Improved Title**: Constructive Discrepancy Minimization for Convex Sets

- **Improved Abstract**: It is shown by a classical theorem of Spencer that any set system with a number of sets and a number of elements admits a coloring of discrepancy of a certain value.

  For any symmetric convex set with of a certain measure, the following algorithm finds a point in the said convex set intersecting with Omega(n) by taking a random Gaussian vector x, computing the point in the said convex set intersecting with a cetain coodinate, and returning y.

  As a result, this provides another truly constructive proof of Spencer's theorem and

the first constructive proof of a Theorem of Giannopoulos.[2]

References

[1] Andy Lewis-Pye George Barmpalias, Richard Elwes. Digital morphogenesis via schelling segregation.

[2] Thomas Rothvoss. Constructive discrepancy minimization for convex sets.