

Introduction:

In the era of emerging AIs, machines are becoming smarter and more powerful. While some may feel worried, I see opportunities to use AI for tasks previously thought too demanding. In particular, chatbots like Sage and DeepSeek can serve as coding companions to rapidly transform beautiful mathematical ideas into visual experiments and hands-on activities. Aiming to help students build an appreciation for these ideas, this workshop uses AI to help preparing Python code for three cases:

1. Touching circles with integral curvatures (See Figure 1)
2. Use of polynomials in information retrieval
3. Visualization of some parametrized curves

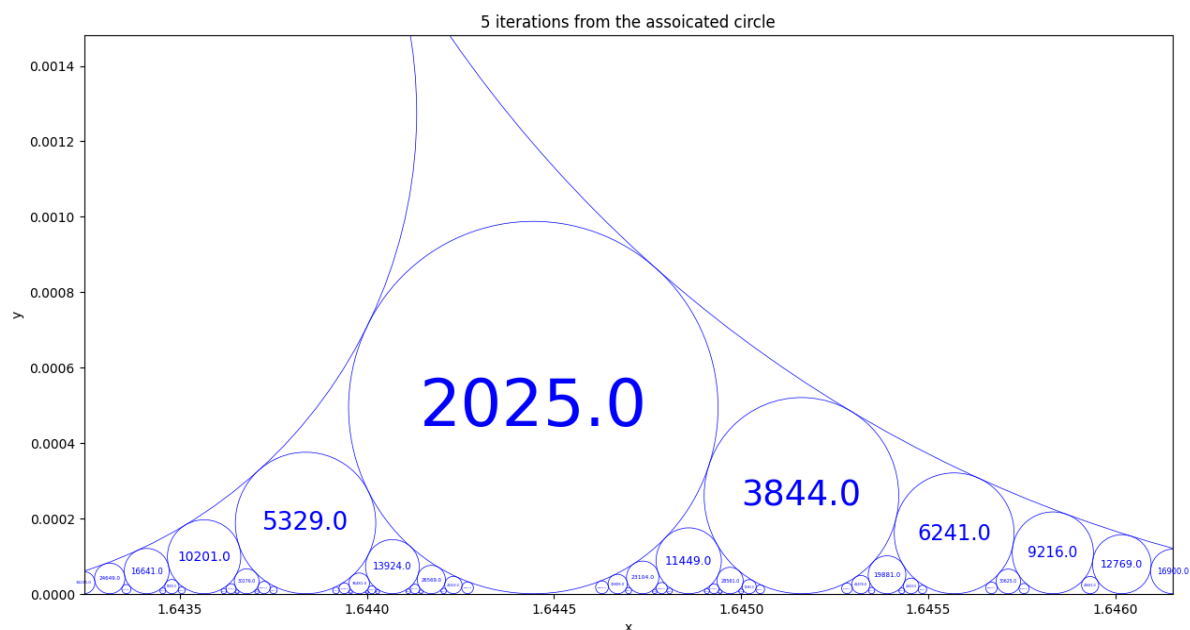


Figure 1. Some touching circles with integral curvatures on a line
This case contains some reflections on attending the Shaw Prize Lecture 2024

Resources: <https://github.com/EssenceBL/MakingFriends>

Resources Status: Open-sourced by Essence Brilliant Limited.

Course History: Summarized in an article appearing in Proceedings of the Hong Kong Mathematics Education Conference 2025 (pp. 89-105.)

Support needed for a delivery

Venue: Computer Room/ PC laboratory

Target Groups: Highly motivated secondary school students

No. of sessions: 3 sessions, 1.5 hours per session

Keywords: Touching circles, Inversion, Descartes Circle theorem, Integral Apollonian gasket, Lagrange polynomial, spirographs