A Scalable DCEL implementation

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DCEL construction in CGAL...

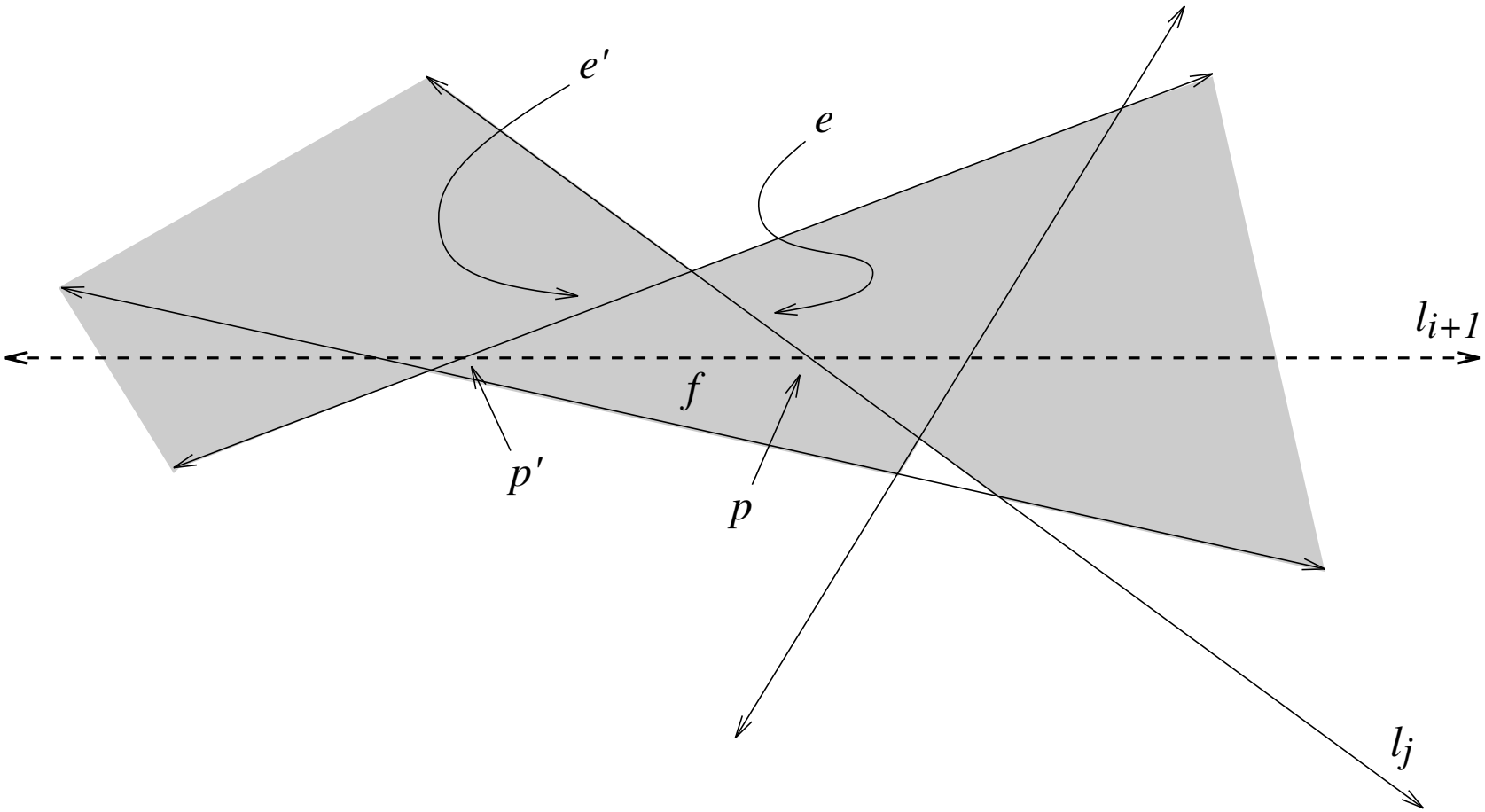
Incremental algorithm [1]

Given a collection $\mathcal{L} = l_1, ..., l_i$ of i lines, we assume the DCEL $\mathcal{A}(\mathcal{L}_i)$
To add next line l_{i+1} do:

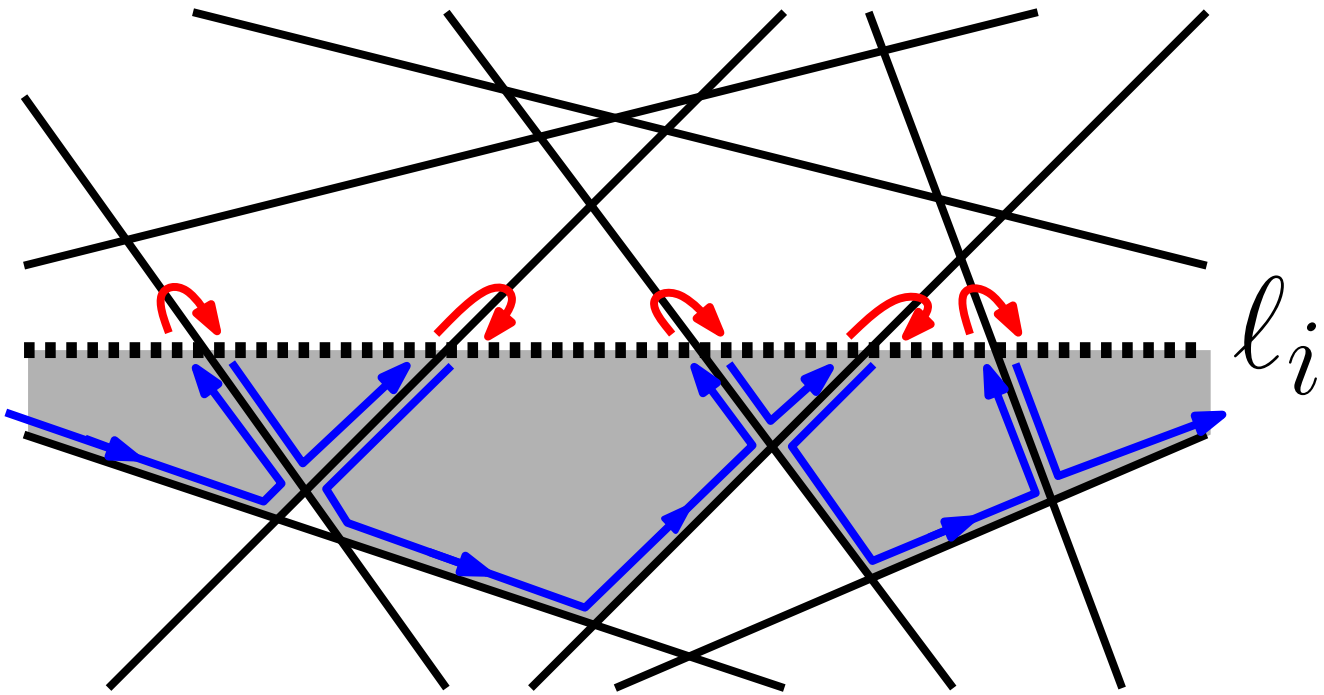
1. Find *zone* (set of faces intersected) for l_{i+1}.
2. Find point p of intersection between l_{i+1} and an edge of $\mathcal{A}(\mathcal{L}_i)$; split that edge.
3. Walk along l_{i+1} from p to left updating $\mathcal{A}(\mathcal{L}_i)$.
4. Walk along l_{i+1} from p to right completing the construction.

[1] D. Halperin, "Arrangements," in Handbook of discrete and computational geometry, USA: CRC Press, Inc., 1997, pp. 389–412.

DCEL construction in CGAL...



DCEL construction in CGAL...



DCEL merge (overlay) in CGAL...

- I did not find a specific reference to the merge (overlay) from two DCEL in CGAL, but...
- Checking github repository Arr_overlay_2.h, it seems the strategy is to add the edges from the smaller DCEL to the bigger one using the incremental construction.