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Pitfalls in mining active transport trajectories KEJIA CHEN, BO WANG, SUNG CHUL BAE, STEVE GRANICK, University of Illinois at Urbana-Champaign — Single particle tracking is useful in characterizing active motion. However, there are many pitfalls in mining such data, from separating the intermittently alternating active and passive motion to fitting a model to the motion. Using statistical tools, we carefully identified such pitfalls and developed new methods to avoid them. Applying this algorithm to endosomal active transport within living cells, imaged by fluorescence microscopy with nm resolution, we observed Lévy walk behavior in multiple cells lines and for different cargo types. This Lévy walk behavior could be easily missed without those statistical tools, which can be very useful in characterizing active motion and identifying regulators in other active systems.

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