Algorithms for Handoff Minimization in Wireless Networks

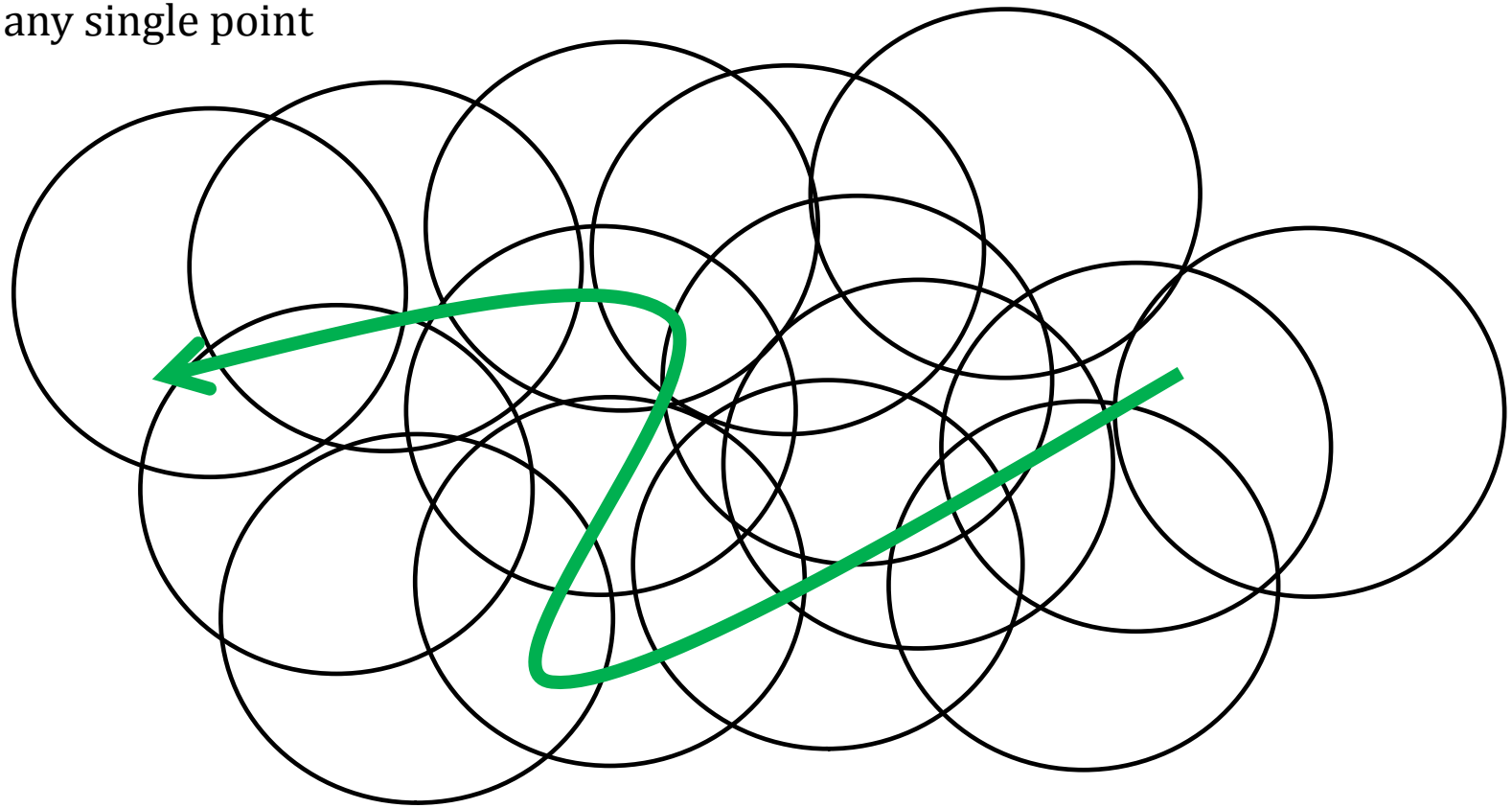
Mansoor Davoodi
Esmaiel Delfaraz
Sajjad Ghobadi
Mahtab Masoori

Davoodi M, Delfaraz E, Ghobadi S et al. Algorithms for handoff minimization in wireless networks. JOURNAL OF
COMPUTER SCIENCE AND TECHNOLOGY 34(4): 887–900 July 2019. DOI 10.1007/s11390-019-1948-2

Handoff Minimization Problem

When a user moves in an area covered by a WN to get the services, he may get connected to multiple APs. The *handoff* operation occurs when the user has to change the connection to the AP that can provide his desired services.

Δ is the maximum number of APs that cover any single point



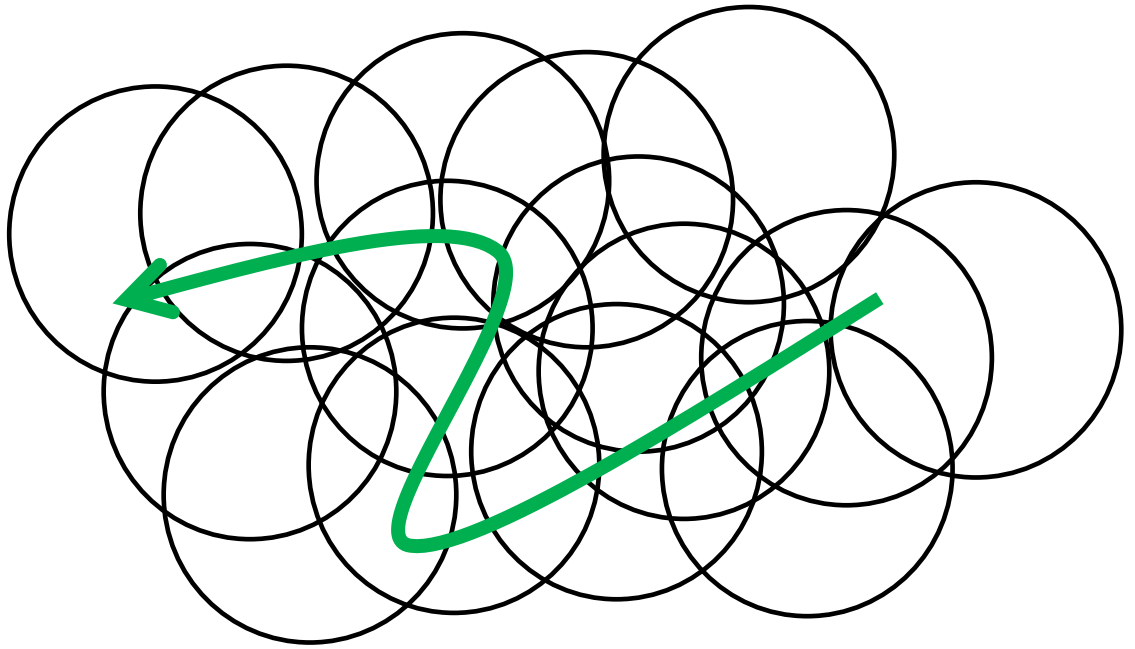
Handoff Minimization Problem

PHM*(the number of users, setting, connectivity assumption, moving pattern)*

We Considered two offline and online settings of the problem, denoted by *off* and *on*.

When a user connects to an AP, he is keeping his connection to the AP until his received signal is not less than a certain threshold, denoted by *uca*, or without connectivity assumption, denoted by *wca*.

Group mobility, denoted by *gm*, and individual mobility, denoted by *im*, where all users move together and they have a group mobility or each user has an arbitrary mobility



Results

Problems	**Results**	**Competitive Ratio** (Deterministic)	**Competitive Ratio** (Expected)
PHM(n, off, uca, gm)	Optimal Algorithm	——	——
PHM(n, on, uca, gm)	Online Algorithm	Δ(Optimal)	O(logΔ)
PHM(2, off, uca, im)	No algorithm to prevent from unnecessary handoffs	——	——
PHM(2, on, uca, im)	No Competitive Algorithm	*Unbounded*	*Unbounded*
PHM(2, off, wca, im)	Optimal Algorithm	——	——
PHM(n, on, wca, im)	Online Algorithm	nΔ(Optimal)	O(logΔ)