Computer Science > Information Theory

Bandlimited Signal Reconstruction From the Distribution of Unknown Sampling Locations

Animesh Kumar

(Submitted on 6 Mar 2013)

We study the reconstruction of bandlimited fields from samples taken at unknown but statistically distributed sampling locations. The setup is motivated by distributed sampling where precise knowledge of sensor locations can be difficult.

Periodic one-dimensional bandlimited fields are considered for sampling. Perfect samples of the field at independent and identically distributed locations are obtained. The statistical realization of sampling locations is not known. First, it is shown that a bandlimited field cannot be uniquely determined with samples taken at statistically distributed but unknown locations, even if the number of samples is infinite. Next, it is assumed that the order of sample locations is known. In this case, using insights from order-statistics, an estimate for the field with useful asymptotic properties is designed. Distortion (mean-squared error) and central-limit are established for this estimate.

Comments:	Submitted to SampTA 2013 workshop
Subjects:	**Information Theory (cs.IT)**; Statistics Theory (math.ST)
Cite as:	**arXiv:1303.1285 [cs.IT]**
	(or **arXiv:1303.1285v1 [cs.IT]** for this version)

Submission history

From: Animesh Kumar [view email]

[v1] Wed, 6 Mar 2013 09:39:09 GMT (13kb)

Which authors of this paper are endorsers?

Download:

- PDF
- PostScript
- Other formats

Current browse context:

cs.IT

< prev | next >

new | recent | 1303

Change to browse by:

cs
math
  math.ST
stat

References & Citations

- NASA ADS

DBLP - CS Bibliography

listing | bibtex

Animesh Kumar

Bookmark(what is this?)