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Memorandum M-1577

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Digital Computer Laboratory
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

CLASSIFICATION CHANGED TO:
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SUBJECT: QUARTERLY STATUS REPORT, CONTRACT N5ori-06002
OCTOBER through DECEMBER, 1951

To: Dr. C. V. L. Smith
Head, Computer Branch, Office of Naval Research

From: William K. Linvill

Date: August 4, 1952

This report summarizes the work done on Project NR232-001 under the extension of Contract N5ori-06002 for the period during October, November, and December 1951. As was done during the last quarter, the bulk of the effort was directed toward theoretical work investigating the application of a system involving a digital computer. In particular most of the work was applied on the problem of smoothing quantized radar data.

A doctoral thesis was started on the problem of obtaining probability distributions for the present and future positions of a target from a set of quantized positional observations.

Experiments on the radar data smoothing problem were performed on the basis of the thesis (1) done during the summer quarter which applied the Wiener-Lee statistical filtering technique to discrete systems. The objective in this problem was to estimate the true present position of an aircraft from the sampled and quantized radar returns. The coefficients of the linear discrete filter were selected to minimize the mean-square error. The Whirlwind computer was used to evaluate the statistical characteristics of the radar returns and also to evaluate the quality of the filter which was designed. The first part of this work is described in Memorandum M-1299.(2)

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1. Katz, Abraham, Computer Program Synthesis Based on Statistical Communication Theory, 1951, M.I.T., S.M. Thesis in Electrical Engineering
2. Katz, Abraham, Statistical Filtering, Memorandum M-1299, Confidential, October 16, 1951, Digital Computer Laboratory, M.I.T.

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Thesis work continued on the problem of smoothing
sampled data to obtain a continuous output.

Signed William K. Linvill
William K. Linvill

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